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Interpretation of Laboratory Findings in Rural Spring Water Supplies*

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ATTEMPTS to reconcile the results of sanitary surveys and of laboratory examinations in rural water supplies of Cattaraugus County indicated that in supplies from springs, certain periods of the year when laboratory findings became distinctly unfavorable were coincident with the appearance of small numbers of salamanders in the springs. Testing out the assumption that these were related phenomenons it seemed desirable to make a study of the salamanders found and to ascertain experimentally whether it was reasonable to suppose that their presence could influence the quality of a water as measured by laboratory tests. This paper is a report of certain phases of such work and is presented in the hope that it will stimulate interest in the problem, and suggest to other workers the possibility of advances in water control technic through the elimination of salamanders from rural spring water supplies.

Salamanders are small amphibians popularly known as salamanders, chameleons, lizards, ground puppies, newts, efts, mud puppies, or hellbenders. Eleven species have been found in Cattaraugus County during our investigations,[1] and 2 additional[2] are reported by Bishop.[3] Of these only 2 have been found in large numbers in springs, *Gyrinophilus porphyriticus*—the purple salamander, and *Desmognathus fuscus fuscus*—the dusky salamander, although 3 other species, *Desmognathus fuscus ochrophaeus*—the mountain salamander, *Eurycea longicaudia*, and *Eurycea bislineata* are occasionally

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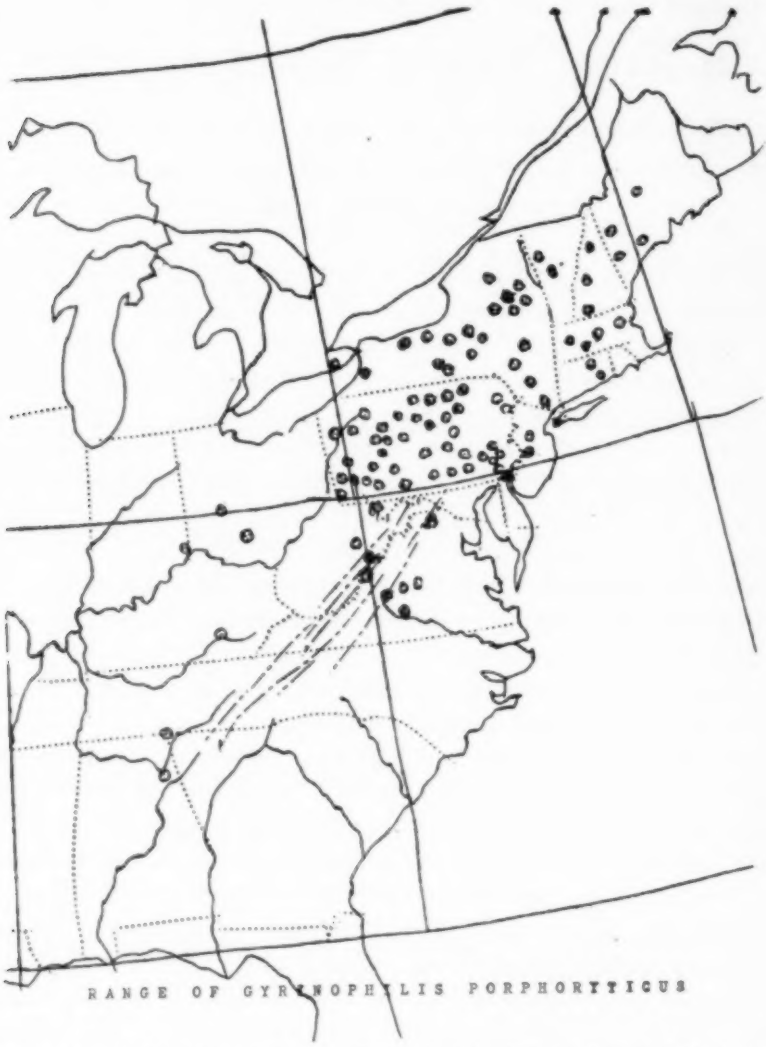
found in springs. The other species are in the main terrestrial or deep water dwellers.

All 5 species are produced from eggs fertilized in the female cloacae by spermatophores either transferred directly from the male or deposited by the male and later drawn into the cloacae. The eggs, usually about 20, hatch about 8 weeks after being laid, producing larval forms provided with external gills and therefore necessarily aquatic. After 9 months to over 2 years, varying with the species,

FIGURE I



Reprinted from The Salamanders of the Family Plethodontidae, by Emmett Reid Dunn

the larvae attain a length of 2 inches in *Desmognathus*, and about 4 inches in *Gyrinophylus*, and at that time lose their external gills, thereafter getting their oxygen through the skin and the walls of pharynx and throat. No *Plethodontidae* ever develop lungs. The purple salamander attains a maximum length of about 8 inches, while the dusky and the closely related mountain salamander are only about half as large. The two species of *Eurycea* reach a maximum length of about 5 inches.

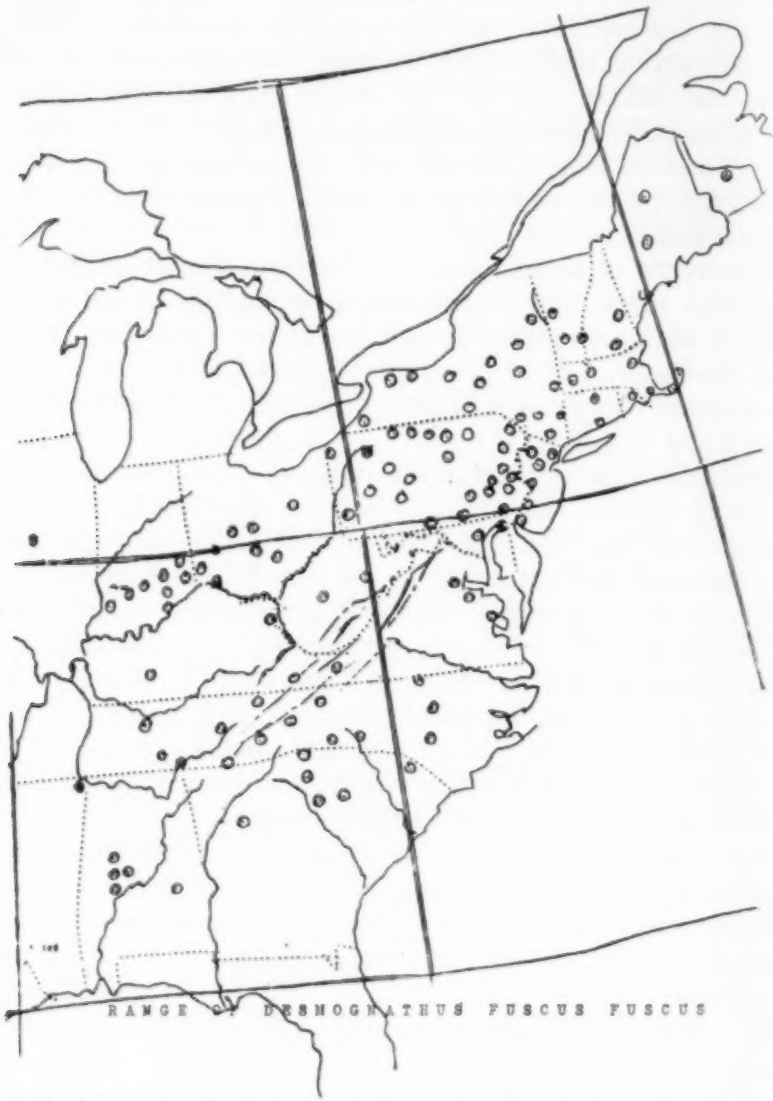
These types of salamanders are confined almost entirely to the Appalachian range, the *Desmognathus* extending somewhat further south, and the *Gyrinophilus* somewhat further north than the central part of the range. Their geographical distribution is well shown on the two charts copied from Dunn's book *The Plethodontidae*.[4] (See Figures I and II.)

We obtained the services of a member of the staff of the American Museum of Natural History[5] to study the distribution and habits of salamanders in the field. Making his first observations in February before the snow had melted from the hills he was able to find salamanders in more than two-thirds of the springs visited, including many which had been located and completely protected according to the recommendations of our State Department of Health. Most of them were remote from inhabited areas, provided with concrete spring houses, protected from surface drainage and surrounded by man-proof fences. Several of these which contained no salamanders on the first or second visit yielded them subsequently. Making his next round in May and June after the snow had melted and the ground was open, he was frequently unable to find salamanders in springs which had shown them formerly, though he soon came to the conclusion that repeated visits at favorable times would again disclose their presence.

The number of salamanders found by careful and continued intensive work on single springs is very surprising. We have taken more than 200 from a spring which frequently failed to yield even one on single visits. According to our evidence, most of the salamanders in any spring at a given time are buried deep within the layers of shale and the number out where they can be seen is very small in comparison with the total number present. In digging out springs we have captured salamanders 10 or 12 feet beyond the point at which the water came to the surface, and as deep as 6 or 8 feet.

In contrast to the usual distribution described, from the middle of May to the middle of June, and again from the middle of October to the middle of November, we found comparatively large numbers,

FIGURE II



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chiefly *Gyrinophilus*, on the surface of the ground during the night from 10 P.M. to 3 A.M.—although none could be discovered in the daytime.

During these periods the animals would wander to distances of over 65 feet from the spring in which they were living, and autopsies revealed that they were feeding during such wanderings. They were found wandering in the neighborhood of springs considered to be adequately protected from outside pollution, as well as near those

unprotected. Careful correlation of the number found wandering on land on certain nights with the temperature and relative humidity, failed to show any relationship. Usually one would find several salamanders at a single spring or else none (Figure IV). During the late spring and summer very few were seen on land.

For study of the movements of individual salamanders we passed a small copper wire through the tail just posterior to the anus and tied a numbered tag to this. By this means we have established the fact that individual salamanders wander freely up and down a stream (Figure V). By placing a large number of tagged salamanders in a spring, and after a period of several weeks digging out the head of the spring, we got some idea of how many of the salamander population we were recovering. Of 163 salamanders captured, tagged, and replaced in an experimental spring we recovered only 25, but captured 18 untagged salamanders which had uninjured tails and therefore were never tagged. A study of the possibilities of the distribution of the remaining tagged salamanders leads us to believe that they were buried in the shale along the main water current at a greater distance than we were able to dig out. Observations of salamanders removed from springs and placed at a distance proved that they possessed a sense of direction which enabled them to return regardless of the contours of the land over which they had to travel.

Bacteriological studies of the gastrointestinal tracts of salamanders show that many of them captured in both protected and

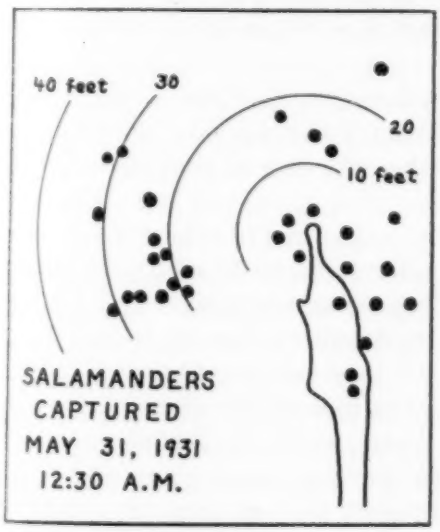

FIGURE III

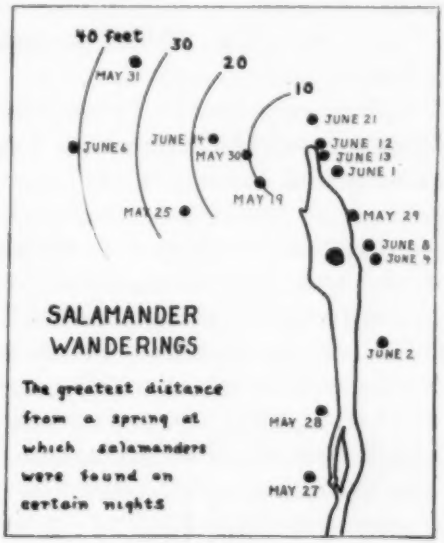

FIGURE IV

unprotected waters contain organisms of the colon aerogenes group. The season and kind of food available seem to influence this, as of 100 salamanders autopsied in February only 11 per cent showed *B. coli* against 66 per cent from a similar series taken from the same springs in May and June.

When placed in sterile water they expel colon bacilli. Our experiments indicate that starving salamanders contain no colon organisms, for we have repeatedly placed those throwing off *B. coli* in flasks of sterile water and, after making daily transfers to similar flasks for a few weeks, have been unable to find colon bacilli on autopsy.

On the other hand, we have very definite evidence that the salamander containing colon bacilli in its intestinal tracts continues to throw them off as long as the intestines contain material suitable for the growth of the organisms, acting as a reservoir or incubator. We fed a salamander *B. coli,* placed him in a tank of running water, gave sterilized food at intervals, and made daily tests of the water at the outlet, for 1 year. We recovered *B. coli* for 253 days. The output was irregular; some days every 0.1 c.c. portion was positive, occasionally, even early in the experiment, all cultures were negative. For the entire year 33 per cent of the 10 c.c. portions tested were positive, as shown in Table I.

FIGURE V—*Wanderings of tagged salamander No. 29 (same scale as Figure IV)*

There appeared to be no relation between the time of individual feedings and the number of colon bacilli thrown off. During the same period the city water used in the experiment showed only 0.5 per cent of the 10 c.c. tubes positive.

Additional evidence is shown by experiments wherein we fed *B. coli* to salamanders and then transferred them from flask to flask of sterile water, with occasional feedings of sterile food. One animal lived 122 days, and we obtained completely confirmed *B. coli* tests from the final flask; another gave off large numbers over a period of 71 days, when it was drowned. Some idea of the number of colon bacilli thrown off was obtained by plate counts on Endo's medium. The salamander that lived 122 days gave off an average of 36,000 *B. coli* per day, sufficient to contaminate 237 gallons of water so

TABLE I

Days of Experiment	10 c.c. Portions			1 c.c. Portions			0.1 c.c. Portions		
	No.	Pos.	%	No.	Pos.	%	No.	Pos.	%
1–50	220	150	68	88	37	42	88	31	35
51–100	210	100	48	84	30	36	84	14	17
101–150	210	142	68	84	26	31	84	18	21
151–200	210	71	34	84	0	0	84	0	0
201–250	210	39	19	84	3	4	84	0	0
251–300	210	4	2	84	0	0	84	0	0
301–365	290	8	3	116	0	0	116	0	0
Total	1,560	514	33	624	96	15	624	63	10

heavily that 40 per cent of the 10 c.c. portions will show *B. coli.* When we consider that we have found over 200 salamanders in one spring it becomes apparent that pollution from them can be quite significant.

In a series of experiments we either fed *B. coli* to salamanders or else permitted them to remain for short periods in a dilute culture of the organism, carried them in flasks of sterile water for several days, then autopsied them. Cultures of the skin, the mouth parts, the stomach and the peritoneal cavity were uniformly negative, while those of the upper and lower intestines showed *B. coli.*

About half of our cultures meet all the criterions suggested to us as identifying colon bacilli from fecal sources. These have included: methyl red, Voges-Proskaur, indol production, Eijkmann tests, Koser's citrate and uric acid tests, inosite and cellobiose fermentation.

What has been said of the ability of salamanders to continue to throw off *B. coli* after becoming infected also applies to the common newt, *Trituris viridescens,* found in large numbers in some open reservoirs. However, newts do not often wander on land after they once enter the water, although the middle portion of their life is passed entirely on land as the small animal known as the red eft. During this stage they can undoubtedly pick up *B. coli.*

Successful methods to eliminate salamanders from water supplies have not been found. No system of screens keeps them out, and walls sunk in the ground only force them to work their way through

the shale mantle rock beneath or to go around on the surface. A concrete wall sunk to bed rock would certainly stop them but this is not feasible, and all methods fail to eliminate those already present in the deep parts of the shale up the underground stream which feeds the spring. We know a spring which is really a dug well where the ground water has been intercepted at a depth of several feet and the bottom of which is covered with a thick layer of sand. This has never shown salamanders and all samples of water tested over a period of several years have been uniformly good.

Since the elimination of a suitable food supply will undoubtedly serve to decrease the salamander population we are preparing a spring by stripping the ground for a large area around the head and covering the surface with slag, believing that by keeping out earthworms we will decrease the chance of salamanders finding suitable food. We have established the fact that the salamander is unable to exist in water which shows a residual chlorine of 0.2 p.p.m., but have been unable to devise a method of applying chlorine at a point far enough above the spring to affect those residing in the depths of the shale, particularly since most of our springs are fed from several underground streams coming from different directions.

From an engineering standpoint we believe that in the Appalachian area it is desirable to revise our methods of protecting springs. In order to control salamanders it is necessary to build fences proof against both men and animals which will protect an area the boundaries of which will be at all points at least 100 feet from the spring or any outcropping of moisture above the spring. This area should be not only protected against surface drainage but so treated that it will be unsuitable for earthworm and insect life. Since the salamander requires a moist skin to maintain life, the protected area should be stripped so that the surface will be exposed to direct sunlight, and drained so that it will be as dry as possible at all times. Any overflow should be piped beyond the enclosure.

In conclusion may we outline our conception of the rôle that salamanders play in Appalachian spring water supplies. The salamanders live in large numbers buried deep within the shale along the underground streams. At certain seasons they come out from the deep recesses to the surface and travel distances of at least 65 feet overland. Here they feed on insects, worms, fly larvae, or similar living food. Should these be infected with *B. coli* through improper protection of the area from direct fecal pollution or surface drainage the salamanders become infected. Then they return to the depths

and throw off *B. coli* for a considerable time. Laboratory tests on such a water supply would suggest condemnation even though the supply was otherwise unpolluted.

REFERENCES

1. *Gyrinophilus porphyriticus*—the purple salamander.
Desmognathus fuscus fuscus—the dusky salamander.
Desmognathus fuscus ochrophaeus—the mountain salamander sometimes called the Allegany salamander.
Eurycea bislineata—the two line salamander.
Eurycea longicauda—the long tail salamander.
Plethodon werhlei—the werhlei salamander.
Plethodon glutinosus—the slimy salamander.
Plethodon cinereus—the red backed salamander.
Ambystoma maculatum—the spotted salamander.
Trituris viridescens—the newt or the red eft.
Cryptobranchus alleganiensis—the hellbender.
2. *Pseudotriton ruber ruber*—the red salamander
Necturus maculosus maculosus—the mudpuppy.
3. Bishop, Sherman C. *The Amphibians and Reptiles of Allegany State Park.* The University of the State of New York, 1927.
4. Dunn, Emmett Reid. *The Salamanders of the Family Plethodontidae.* Smith College Anniversary Series, 1926.
5. W. G. Hassler was kindly loaned to us by G. Kinsley Noble, Ph.D., Curator of the Department of Herpetology and Experimental Biology, American Museum of Natural History.

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Transmission of Endemic Typhus Fever

SEVERAL months ago the announcement was made by the U. S. Public Health Service that endemic typhus fever, which has been recognized for several years in the United States, had been shown to be transmitted by fleas.

Additional studies indicate that the rat flea is the agent that transmits this condition. This work has been proved by laboratory experiments and by field studies, all of which have been conducted by the Service. There seems to be ample evidence that endemic typhus fever is spread from rat to rat by the rat flea, and from rat to man by the same agency.

Getting Public Health Needs Across to Appropriating Bodies by a Municipal Health Department*

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IT is the writer's opinion that the first step in securing a sufficient appropriation for the maintenance of a public health service in a municipal health department is to formulate a program for the establishment of a whole-time health service. To be effective, such service must be manned with a qualified and trained personnel, and blessed with funds sufficient to carry on the essential work. Where funds are lacking, the program itself becomes the necessary fundamental but cannot be executed without the help of public opinion which must be aroused through a combination of the recognized means of health education. Public confidence and support demands a reasonable appropriation for public health service. It is obvious, however, that some individual or group of citizens must take the initiative in bringing the local needs to public attention. Appropriating bodies continuously feel the pulse of public opinion and are guided thereby. Newspapers, clubs, and civic organizations can be extremely helpful.

Not many years ago in one large city, the editor of the principal newspaper decided, after consultation with the health officer, that public opinion had not been aroused to the seriousness of the local tuberculosis problem. An intensive educational campaign was instituted with a 2-column bold type editorial on the first page of the home edition for 60 consecutive days. The stories were prepared by a clever newspaper man who had spent hours in the health department studying the situation and becoming familiar with the community needs for public health nurses and hospital facilities. When the appropriating body met a few weeks later, the politicians fell all over themselves in their endeavor to be first to champion the requested appropriation for clinic maintenance, the employment of public health nurses, and the construction of a sanatorium. These men had

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sensed popular opinion and were convinced that it was to their advantage to support these particular items.

The history of modern public health procedure in numerous cities throughout the country is replete with instances of this character, where citizens, committees, individuals, and groups, with newspaper support, have molded sentiment in favor of preventive medicine.

If we carefully analyze the Appraisal Forms approved by this Association, we will find no individual section of this measuring stick which deals with public health nursing. There are chapters on vital statistics, communicable disease control, venereal disease, and tuberculosis activities, the health of the child from prenatal to school service, sanitation, milk and food control, health education, and the laboratory service, but no division for nursing. However, a careful survey of the individual items which constitute the maximum rating of 1,000 points which any local health organization can obtain, will disclose the fact that, if we pick out those items toward which the principal contribution is from the public health nurse, the latter is actually responsible for approximately 45 per cent of the maximum rating, 450 of the total of 1,000 points. These include the evaluation of field nursing service, clinic service, health education, and the like. We may fairly conclude that in the modern health organization public health nursing service is responsible for nearly one-half of the entire program, and the health department is justified in expending nearly one-half of its budget for preventive service in its nursing division. Therefore, if we are to sell locally a modern health service, we must give particular heed to the establishment of a well organized, well qualified, efficient nursing staff. It naturally follows that in selling the health program, we must, of necessity, sell the nursing service.

The public health nurse is in a unique position in that her duties are such that her work is appreciated by the public more readily than that of others in the health organization. She becomes the family counsellor, she enters the home with a spirit of willing suggestion and hearty coöperation, she comes as a counsellor and as an adviser, and she endears herself to the hearts of the mothers and young children of the household. On the other hand, the physician or the inspector more frequently appears as the agent of the law, who inflicts quarantine or serves notices for the improvement of environmental sanitation. It is much easier to establish a program for the conservation of child life and the reduction of maternal mortality than it is to revolutionize milk and food sanitation by requiring pasteurization, or promulgate a housing code to wipe out slums and abate nuisances.

Each new friend cultivated and won over to the principles of infant hygiene and vigorous health for the school child becomes a propagandist in bringing popular opinion to the support of the health service.

A campaign for the reduction of infant mortality provides the health officer with his sales talk. A map of the city is prepared, showing the births and deaths under 1 year in each of the numerous sanitary districts into which the city has been divided. From these, we readily calculate the infant mortality. There will be districts in which the rate among infants is below the average; there will be others in which there are no deaths. On the other hand, there will be areas in which the death rate is far in excess of the average for the city. It is in such districts that a health department should intensify its educational program, establish its clinics, and release its public health nurses as home visitors. The results will be immediate. The mortality rate will decrease until it approximates or even falls below the average.

A map showing the loss in child life before and after the establishment of such a campaign becomes a potent tool in the hands of the health officer before his appropriating body. It is possible to show that with a given appropriation for nurses and clinic service a certain definite number of infant lives can be saved each year in the specified areas. These areas can be referred to specifically by giving the names of the streets forming the boundary. With the assurance of the health officer that for a given appropriation, he can save a specified number of lives, it takes a rather hardened body of politicians to refuse a reasonable appropriation. In other words, it can be shown that for a given expenditure a certain quantity of health can be purchased. Grant the health department the means with which to employ public health nurses, and infant lives can be conserved.

The public health nurse's prime function is to teach health. She plays an important rôle in every function of the health department which depends for success upon health education. On every occasion the health officer should endeavor to impress upon the public mind this important function of the nurse.

During the past 3 years, the Detroit Department of Health has been putting into operation a program of participation by the general medical practitioner in official public health procedure, the ultimate objective of which is to secure the sympathetic and wholehearted support of the medical profession in order that the general practitioner will not only practise curative medicine, but will actively take his part and share of the responsibility in the preventive medical program.

A beginning was made in the field of diphtheria prevention. All free clinics were abandoned and there were established a group of 1,100 coöperating physicians who have performed the service of immunization in their own offices. There has been a series of post-graduate conferences in communicable diseases which has assisted in standardizing the service and stimulating medical interest and coöperation. For service to indigents, physicians have been paid by the Department of Health at a modest rate.

To bring about the protection of a large number of children involves a 3-cornered coöperation between the public, the medical profession, and the department of health. The department, through its division of health education and through its nursing service, must instruct parents. The department must also prepare the medical profession for the service which it is to perform. Once the parent has learned what service is expected and the value of such service, and how much it will cost, you can be assured of at least the coöperation of the intelligent members of the community.

During the first few months of the Detroit campaign to stimulate public interest, the educational propaganda necessary to give impetus to the work included newspaper stories, paid advertisements, posters, lectures, bill-board advertising, radio talks, and the generous distribution of literature. The results were not noteworthy, as it was found that we reached approximately 18 to 20 per cent of the children who we estimated were in need of service. The plan was then conceived of expanding the educational program by having a house-to-house canvass made by public health nurses. The objective was to secure the protection, through immunization in the physicians' offices, of all children between the ages of 6 months and 10 years. For 4 months 112 of these health educators devoted their whole time to this work and canvassed a total of 163,402 families. At the time of the first nursing visit, it was found that 15 per cent of babies between 6 months and 1 year of age had already received protective treatment; 43 per cent of the preschool group; and 59 per cent of the school group were protected. As a result of this intensive sales-drive by the public health nurse, the per cent of protected children was increased to 52; that of the preschool child to 70; while that of immunized school children increased to 80. What better demonstration could we have of the results which the public health nurse can obtain by winning parental confidence and coöperation to such extent that 73 per cent of the children below the age of 10 years is actually protected against diphtheria?

Now you may inquire as to what bearing this campaign has upon

the problem of securing an appropriation for a nursing service. It has a very important influence. Public attention had been focused upon the needlessly high diphtheria death rate, and the city council had expressed its willingness to back any reasonable program and expenditure as long as results could be obtained. The diphtheria death rate has been cut to one-fourth and the health officer charges the responsibility for this reduction largely to the nursing service of the department of health. It becomes an extremely potent argument for appropriations.

Briefly, let it be said that the public health nurse is the largest single factor in the modern municipal health organization. In popularizing the work of the department, the health officer must inevitably bring forward the tremendous influence which the well trained nurse is manifesting in the reduction of the death rate and in the elimination of needless sickness and distress. May we again repeat that a plan for a well rounded, whole-time local health service is the first essential, and upon this foundation must be created a public confidence in the work of the public health nurse.

German Society of Pediatricians

THE Society of Pediatricians of Germany has recently issued a statement expressing its apprehension over the health of the children of Germany and Austria. The statement points out the general deterioration of the children's health; their low resistance to disease, the increase in the cases of tuberculosis, and other conditions similar to those prevalent in a time of famine. It warns the authorities against the dangerous consequence of further reduction of the expenditures for the care of sick children and for child welfare in general, and concludes by saying that "if economy must be effected it should not be at the expense of the children who are the future of the country."—*Gesundheitsfürsorge für das Kindesalter*, Berlin, 6, 6:457, 1931.

Training in Administrative Procedures of Personnel for Child Health Work*

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PRESUMABLY, the principles of administration that should be taught to those who are to engage in child health work do not differ materially from those that should be taught to personnel that is to serve in other branches of the health department. Administrative procedures appropriate for the health department as a whole, and covering the work of its several branches, should be suitable for the bureau of child health work. Certainly the local health organizations of counties and towns cannot, as a rule, have special personnel for particular problems. The small staffs of these organizations have to spread themselves over the entire field of public health, including child health work; there is no possibility of special administrative procedures for special branches of the local health service. The personnel requires training that is broad and general; there is little chance for specialization.

Irrespective of whether the teaching in administrative practices is to be for specialists in child health work or some other branch of the health service, or for general workers in the field, certain questions will arise:

1. What persons or groups are to be taught?
2. What are to be their duties and what should they be taught?
3. How should public health training, the factor of greatest fundamental importance for progress in child health work, be made available for health personnel?
4. What is the outlook for the future?

The personnel to be taught includes present and prospective employees of national, state, and local health agencies, both private and governmental, principally the latter. There will be the technical and administrative staffs of the central organizations of the national, state, and city health services, and the general field workers of these agencies, and those of counties and towns, including health officers,

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nurses, and inspectors. Although the technical experts of the central organizations will always be relatively few, the field workers will be numbered by the thousands when local health services have been developed throughout the nation. Even now their number is exceedingly large. The following ratios of health personnel to population have been suggested by one writer: a medical health officer for every 20,000 inhabitants, a sanitary inspector for every 10,000 inhabitants, and a public health nurse for every 5,000 inhabitants. However, these ratios have been reached in only a few places.

The facilities necessary for effective child health work include practically all those supplied by the average health departments of states and cities. There must be provision for the collection and analysis of birth, morbidity, and mortality statistics; diagnostic and biological laboratory service; divisions for preventable and contagious diseases, for sanitary engineering, for local health services, including nursing; and services for dealing with special diseases and special problems. All of these branches, administratively and scientifically, are able to play essential parts in protecting the health of children.

Each division or bureau of a health service has a director or chief, who is expected to be a specialist or technical expert in his particular field. For example, the director of a bureau of child health work should be a first class pediatrician; through university courses he should have acquired special knowledge of public health, including public health administration; and he should be experienced in health organization work. Such a background of training should enable the director to maintain a harmonious relationship with the central health organization and its other bureaus, and with the local health organizations upon which he must depend for carrying out the measures in which he is particularly interested. He should be qualified to assist the chief executive in selecting competent personnel, and to give that personnel special training in his field. If he has assistants they should likewise have special technical and general public health knowledge to enable them to share in his many duties and responsibilities.

The staff members of local health organizations are general field workers; they correspond to general practitioners in medicine. They should all have a general knowledge of public health work, and each should have some special knowledge in order to carry out his or her share of the organization's program; but they are not expected to be technical experts in pediatrics, bacteriology, statistics, tuberculosis, or other specialties. These men and women should know the health laws, the rules and regulations of the health organization and its administrative principles. They should know how to plan and carry

out a program of work; how to reach and deal with problems in the home, the school, the clinic; how to accomplish results both by their own labors and by inspiring others to work. They should be teachers—translators of scientific knowledge into simple terms which the laity will understand. In short, they should be emissaries of health to all the forces of the community.

The impression that has prevailed in the past that any physician or any bedside nurse is qualified for public health work is now recognized to be wrong in responsible circles. The public health worker must have special training, since public health is a specialty for which specific knowledge and training are necessary. It would not be practicable to present here a detailed statement of all that should be taught to the prospective health worker. In general it may be said that the courses required for certificates or diplomas by the best equipped schools of public health would cover the essential special knowledge, including general administrative procedures. The directors of health bureaus and their associates should have had such courses, as should also the local health officers in so far as this is possible. The nurses should strive to take the courses required for university diplomas in public health nursing. University courses for sanitary inspectors have not been established or utilized to any great extent, consequently inspectors are very largely dependent for training upon the school of experience and training stations. University courses, then, should be taken by all health workers, and this instruction should be supplemented by field experience.

The question—How shall public health instruction be made available for health workers?—is perplexing. It is not yet practicable to restrict employment to health workers who have diplomas. Lawyers, doctors, and teachers, after going through transition periods, finally found it feasible to limit practice to those who meet legal tests as to preparation. When this stage may be reached in public health one can only guess. Certainly it is not near at hand. Eligibility qualifications in this new field will be difficult to enforce until there are more candidates for positions than there are positions. Present conditions as to compensation and security of tenure are too unsatisfactory to attract the best class of young men and women to public health work. Moreover, many of those now engaged in this work are not very promising persons. Many are not qualified to take university courses in public health because their basic education would not enable them to meet admission requirements or to carry college work. Many also have passed the age for successfully taking courses even if they had the necessary foundation. There is no

record available of the ages of nurses and inspectors in public health work, but it has been found that the average age of 225 full-time city health officers is 51 years, and the average age of 483 county health officers is 47 years. Of these 708 full-time health officers, only 102 are under 35; 68 are 35–40; 207 are 41–50, and 331 over 50. If the ages of the medical officers are to any degree indicative of the ages of the nurses and inspectors, it is obvious that the first step in approaching eligibility standards will involve the restricting of new appointments and replacements to young persons whose basic education is equal at least to university admission requirements.

Efforts to make it possible for young and capable health workers to have the advantages of university courses in public health have met with some success. Voluntary health agencies have granted fellowships in public health, covering tuition, travel, and living expenses. The health agencies themselves, recognizing that the problem is so large that private agencies would be barely able to scratch its surface, have in a few instances adopted a policy of giving study leaves with full or part pay to qualified employees. The potentialities for further development in this direction are large, but not large enough to meet the urgent problem of trained personnel with which health departments are now confronted.

Some training of field workers has been attempted by the technical and administrative staffs of the central health organizations, but this semi-tutorial instruction is expensive and irregular and interferes with routine work. In a few states the practical training of new or inexperienced personnel has been systematized. Training stations have been established. An experienced and university trained health officer, nurse, and inspector are assigned to the station—which is usually an efficient county department of health—to give the instruction. Small groups of physicians, nurses, and inspectors are admitted to the station for courses of from 6 to 12 weeks. These students observe efficient work and take part in it; they are taught by capable teachers who also appraise them as to aptitude. Their living expenses are paid by the state department, which frequently secures from private sources a part of the funds required for this purpose and also a part of the salaries of the instructors.

Alabama, Mississippi, Michigan, Missouri, and Tennessee have operated training stations during the past year or longer. The results are reported to be satisfactory. Aside from the teaching, these ably staffed county health organizations develop and demonstrate health procedures of a high order. They test the value of

established measures and improve them or develop better ones. Usually they carry on at least one epidemiological field study.

Thus it will be seen that although ideal conditions for supplying the best kind of health instruction for personnel are not uniformly available, the problem for the workers, in certain states at least, is gradually being simplified, and a foundation for suitable eligibility requirements is being laid.

The outlook for the future may be regarded as mildly encouraging. In normal times, funds for health work are obtainable somewhat more easily than formerly. A few trained workers are gradually infiltrating into the public health structure. The idea of trained personnel is gaining headway slowly in official and in lay circles. These developments are occurring in all the essential branches of public health service especially including that for child health.

SUMMARY

1. Public health training is needed for health officers, nurses, and inspectors of the local health services and for the administrative and technical experts of the central organizations.

2. These workers should be taught the subjects included in leading university courses in public health work and administration.

3. The instruction should be supplied by the universities; but as the present situation cannot be met in this way alone, the larger health organizations find it necessary to operate training stations.

4. The cost of training cannot be met as yet by the employees or candidates for positions. In a few instances it is being assumed by the state health departments, with such aid as they can obtain from private agencies.

5. Rigid eligibility requirements for health personnel cannot yet be enforced, except possibly as to age and academic education of new appointees; but progress in laying a foundation for suitable standards in the future is being made.

Incidence of Sub-Clinical Mastitis*

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DURING recent years there has been a growing tendency to attribute an important public health significance to infections of the udder, particularly those due to a streptococcus. The relationship between septic sore throat epidemics and udders infected with streptococci has been one of the principal factors in focusing attention of public health officials upon this type of infection. Milk control officials have been interested not only because of the disease producing possibilities but also on account of the difficulty in actually reducing the number of organisms in milk from infected udders to an acceptable minimum.

The use of terms involving infections in the udder has become somewhat confusing. The term "mastitis" has been roughly applied to all types of udder infections with no consideration of the degree or type. At the outset it should be understood that a discussion of mastitis does not of necessity include the problem of the milk-borne septic sore throat epidemic. Udders harboring organisms responsible for these epidemics have probably become contaminated from a human source with a type of streptococcus distinct from those found in other forms of mastitis. Udders infected with the mastitis type of streptococcus may never be involved. In other words, ordinary mastitis is not the cause of epidemic septic sore throat. On the other hand, infection with *Streptococcus epidemicus* or *S. pyogenes* may produce the same pathologic and clinical picture in the udder as infections (mastitis) caused by the more common bovine streptococci. This discussion does not include udders infected with the human type of streptococcus.

Mastitis brought about by bovine streptococci, and possibly in some instances micrococci, may be found in two or three clinical forms. The *acute* or *clinical* type is relatively uncommon. The symptoms include an extreme toxic condition, with swollen and highly inflamed udder. The cow is prostrated. Little or no milk can be drawn from the offending quarter. A purulent discharge is usually

* Read at a Joint Session of the Laboratory and the Food, Drugs and Nutrition Sections of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 16, 1931.

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present. A distinct rise in temperature is noted. No special methods of detecting this type of infection are necessary as the condition is obvious.

In contrast to the acute or clinical mastitis is the more common *sub-clinical* type, in which the cow may appear practically normal. There is no toxemia, little or no rise in temperature, and the udder may not show any swelling or inflammation. The milk may be normal in appearance with the possible exception that a few flakes may be seen when strained through fine gauze or wire screens. In aggravated cases pus may be present. A " watery " condition of the milk may be noted in certain instances. The cow appears normal and remains in the milking line. The incidence of this sub-clinical type of mastitis or low grade infection of the udder is the subject of this discussion.

To secure information as to the prevalence and importance of sub-clinical mastitis, two or three samples of milk were secured at intervals from each quarter of approximately 200 cows. These were submitted to the usual laboratory examinations for the detection of mastitis, *i.e.*, cell count, reaction (brom-thymol-blue), amount of lactose, chlorides and catalase present and plating upon veal infusion as well as blood agar. The samples were also incubated over night at 37° C. and examined microscopically for long chained streptococci.

A manual examination was made by a competent veterinarian of each cow, to determine the presence of fibrosis or induration of the udder. Subsequently approximately all were examined post-mortem, and the presence of fibrotic and indurated tissue as well as of pus pockets was noted in the udder.

Of the milk from 439 quarters, 48 per cent showed streptococci (Table I) as evidenced by the presence of streptococcus-like colonies on veal infusion and veal infusion horse blood agar plates. These varied from a few hundred colonies per c.c., to a maximum, in one instance, of over 5,000,000 per c.c. The greater proportion of the quarters carrying streptococci showed less than 100,000 per c.c. Only

TABLE I

NUMBER OF QUARTERS OF COWS WITH NO CLINICAL EVIDENCE OF MASTITIS, WHICH CARRIED STREPTOCOCCI

Number of Streptococci	*Number of Quarters*	*Per cent of Quarters*	*Per cent of Quarters Showing Pus upon Post-mortem*
No streptococci	239	52	2
Streptococci present	200	48	17.5
Less than 10,000 per c.c.	71	16	
10,000 to 100,000 per c.c.	83	20	
More than 100,000 per c.c.	46	12	

Total quarters which showed pus=9 per cent.

12 per cent of the total number of quarters studied carried streptococci in larger numbers than 100,000 per c.c.

A post-mortem study of the quarters which showed streptococci in any number in the milk indicated that nearly 18 per cent showed pus, against only 2 per cent of those of the milk which showed no streptococci. In only 9 per cent of all quarters examined could pus be found upon autopsy.

Further study of the quarters which showed no streptococci by the use of cultural methods indicated that, by direct examination of the incubated milk, in certain instances long chain streptococci could be demonstrated. It is of interest to know that these particular quarters which showed streptococci upon microscopic examination and did not evidence any streptococcus-like colonies upon agar plates were found to contain pus upon post-mortem. With few exceptions the milk from all quarters which showed pus post-mortem showed streptococci either culturally or microscopically.

It has become common practice among veterinarians to detect the presence of abnormal tissues by manipulation of the udder. These are usually fibrotic or indurated. The presence of this fibrosis and induration has been interpreted by those who lay stress upon physical

TABLE II

NUMBER OF QUARTERS SHOWING FIBROSIS UPON POST-MORTEM

	Number	*Per cent*	*Per cent Showing Pus upon Post-mortem*	*Per cent Showing Streptococci in Milk*
Marked fibrosis	298	66	14	37
Slight fibrosis	52	10	4	41
Normal	78	24	1+	22

examinations as indicating the presence of mastitis. A study of 428 quarters (Table II) which had been subjected to careful physical examination indicated that approximately 76 per cent showed fibrosis to some degree. Subsequent post-mortem indicated that, with very few exceptions, the results of physical examination could be confirmed by autopsy findings, showing that fibrosis and induration of the udder may be accurately detected by a competent veterinarian. The significance of this fibrosis, however, is still a debatable question.

Only 24 per cent of all of the quarters examined failed to show fibrosis or induration. Of the 24 per cent non-fibrotic udders only 1 per cent showed pus upon post-mortem, while 22 per cent showed streptococci in the milk. On the other hand, of the quarters which were fibrotic to some degree, 18 per cent showed pus upon post-mortem, and 78 per cent streptococci in the milk.

TABLE III

NUMBER OF INDIVIDUAL COWS WITH NO CLINICAL EVIDENCE OF MASTITIS WHICH CARRIED STREPTOCOCCI

Number of Quarters	*Number of Cows*	*Per cent of Cows*	*Per cent of Cows Showing Pus in One or More Quarters upon Post-mortem*
No streptococci in any quarter	26	22	2
Streptococci in one or more quarters	92	78	25
Streptococci in one quarter	40	34	17
In two quarters	35	30	25
In three quarters	13	11	34
In four quarters	4	3	25

Cows showing pus (post-mortem) in one or more quarters=21 per cent.

It has been intimated by certain investigators that a large percentage of cows harbor pus pockets in the udder, the organisms from which may be thrown off intermittently into the milk supply, and unless regular examinations are made these pus pockets may remain undetected.

An autopsy examination of 560 quarters showed that slightly more than 9 per cent contained pus pockets. On the other hand, 21 per cent of the cows (Table III) studied showed pus post-mortem in one or more quarters. The detection of these animals by cultural methods proved to be extremely unsatisfactory. Of 151 quarters in which pus was found post-mortem, only 20 per cent showed streptococci in the milk, and approximately 35 per cent gave no indication by chemical tests, viz., amount of chlorides and lactose, that the milk might be abnormal. In other words, more than half of the quarters which on autopsy were found to harbor pus pockets were secreting milk which gave no evidence of the presence of pus in the udder tissues by cultural examination.

It has been thought that the presence of fibrosis and induration in the udder indicates an infection. A study of 440 quarters (Table IV) showing fibrosis indicated that 78 per cent showed streptococci in the milk. In other words, 22 per cent of all the quarters which showed fibrosis to some degree failed to show streptococci in the milk,

TABLE IV

RELATION OF QUARTERS WHICH CARRIED STREPTOCOCCI TO THE PRESENCE OF FIBROTIC TISSUE UPON PORT-MORTEM

Number of Streptococci	*Number of Quarters*	*Per cent of Quarters Showing Fibrosis*		*Per cent Showing No Fibrosis*
		Marked	*Slight*	
No streptococci	236	54	13	32
Streptococci present	204	62	16	21
Total	440	58	14	27

TABLE V

INCIDENCE IN HERDS OF FIBROSIS AND PRESENCE OF STREPTOCOCCI

Herd	*Number of Cows*	*Per cent of Quarters Showing Fibrosis upon Post-mortem*	*Per cent of Quarters which Showed Streptococci*
I	14	66	
II	12	78	48
III	26	98	36
IV	17	80	60
V	10	65	48
VI	14	75	35

which indicates that fibrosis does not necessarily signify the presence of an active infection. It is more reasonable to assume that this fibrosis and induration is the result of infection rather than an indication of the presence of infection. The presence of these abnormal tissues indicates either a *present* or *past* infection.

Physical examination of 221 cows from a typical dairy district showed that only 7 per cent did not give evidence of some degree of fibrosis or induration in 1 or more quarters. Further study of this 7 per cent also revealed that all of the remaining cows, with 1 exception, either carried streptococci or showed pus upon post-mortem in 1 or more quarters. In other words, only 1 of 221 cows studied was found to be free from fibrotic tissue, pus, or streptococci in all 4 quarters. Further tests no doubt would indicate some type of abnormal condition in one of the quarters of this remaining "normal" cow.

In certain instances (Table IV), as high as 98 per cent of all of the individual quarters in herds were found either to carry streptococci or show the presence of fibrotic tissue in the udder.

CONCLUSION

Sub-clinical mastitis is relatively common and without careful laboratory control or veterinary inspection may remain undetected. Physical examinations, supported by autopsy observations, indicate that as high as 98 per cent of the quarters in certain herds may show fibrosis or induration. This condition probably signifies previous as well as present infection.

In nearly one-half of all of the quarters studied streptococci could be demonstrated by cultural or microscopic methods, the percentages being greater in quarters showing fibrosis.

Approximately one-fifth of the 221 cows autopsied showed pus pockets in the udder. The milk secured from these animals prior to autopsy gave no indication, culturally, in more than one-half of the cases, that the udder might be abnormal.

Postgraduate Study in Child Hygiene in the United States and Canada*

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IN order that I might inform myself accurately with reference to the opportunities for postgraduate study in child hygiene in the United States and Canada, I have written to all the medical schools offering postgraduate courses and to the schools of public health. I was surprised to find in studying the replies to the letters, and in investigating the catalogues and announcements which were sent to me, that the opportunities for postgraduate work in child hygiene are extremely limited.

Most of the medical schools as a part of the undergraduate work in connection with the department of pediatrics give some instruction on the care of well children and give the students a chance to observe the work of so-called well baby clinics. A number of medical schools also offer postgraduate courses in pediatrics which include the same type of instruction in the care of well children. Very few of the schools go further than this, and none offers complete systematic courses in child hygiene. Undoubtedly one's knowledge of certain aspects of child hygiene would be furthered by taking a postgraduate course in pediatrics in any one of the many well recognized medical schools. These courses, however, cannot be considered in any sense courses in child hygiene, and therefore no attempt has been made to analyze the instruction given. This matter has been thoroughly presented in the report on pediatric instruction prepared by Dr. Borden Veeder for the White House Conference on Child Health and Protection.

If we turn next to the schools of public health we find that there is a surprising lack of systematic instruction in child hygiene. There are courses offered which cover certain aspects of the subject, but complete courses are given in only 2 schools, Johns Hopkins and Harvard. In various universities courses are offered which present certain aspects of child hygiene.

* Read before the Child Hygiene Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 17, 1931.

At Yale, in the School of Bacteriology, Pathology, and Public Health, there is a short elective course on infant welfare which includes lectures and discussions in regard to the technic of the organization of the campaign against infant mortality including prenatal work, administration of infant welfare stations, and public health education as related to infant hygiene. This occupies 2 hours a week during the spring term.

In the Graduate School of Education an opportunity is given through the Yale Psycho-Clinic for research in the field of child development and child hygiene with special emphasis on the period of infancy.

In the course in public health administration considerable time is given in class, and several hours in the field, to child health clinics and to health work in the schools.

There is also a course in school hygiene dealing with the problems of school sanitation and with the objectives and methods of organization involved in the supervision of the health of the school child. This course consists of 2 hours a week for 1 term.

A course in practical field work in public health offers an opportunity for direct clinical experience in various fields of municipal health department activity, and this, of course, includes observation of work in child hygiene.

At the University of Toronto, School of Hygiene, there are clinics on communicable diseases and also students attend well baby and prenatal clinics, but there is no course in child hygiene.

At Columbia University, under the DeLamar Institute, there is a course devoted to preventive medicine and public health administration occupying 1 hour a week for 3 semesters. Also, in the summer session there is a course on school health inspection and school health supervision emphasizing mental hygiene and another emphasizing physical education.

At the University of Minnesota, through its Institute of Child Welfare, there is a course in child welfare leading either to a master's or doctor's degree. Lectures include such subjects as, child training and child psychology, physical development, care and development of the young child, parental education, and mental examination of the preschool child. Courses are held at various times throughout the year and cover quite fully this aspect of the subject. The Institute of Child Welfare offers a particularly fine opportunity for students wishing to do special work in this department of child hygiene.

At the University of Iowa, in the summer courses in child welfare,

there are opportunities for the study of various phases of child hygiene. One course of 5 hours a week for 6 weeks gives an introduction to child development. A second one on nutrition is a series of lectures dealing with the principles of nutrition with special emphasis on their relation to child health and the technics of feeding. There are also several courses on child psychology, one on physical growth, and another on genetics. There are several courses on the social aspects of child hygiene, such as parent education and the child in the home. There are also opportunities for field work in research in physical and mental measurements.

At the Massachusetts Institute of Technology, in the department of biology and public health, there are several courses on health education. A course is given 2 hours a week for the first semester which is a consideration of the procedures and methods used by health and school departments in health education. Practical field work is given to allow the student an opportunity to study and participate in these activities. A similar course is available also as a summer course.

Another course in school health administration, given 1 hour a week during half a year, deals with the organization of the health work expected from teachers, doctors, nurses, physical educators, nutrition workers, and others, presenting the objectives and measurements of accomplishment for each phase of the work.

Boston University offers through its school of education a course on health education 2 hours a week throughout the year, discussing desirable habits, knowledge, and activities with an appreciation of a health education program as a vital part of the school system. A second course, given 2 hours a week, is designed primarily for those interested in working out a coöperative program in health education. A third, given 2 hours a week, deals with the principles and problems in the administration of health education programs. This is a somewhat more comprehensive course designed primarily for graduate students and teachers in active service, and is planned to give lay instruction in such matters as first aid, school feeding, mental hygiene, health teaching in elementary and intermediate grades, physical education, athletics, and so forth.

At Johns Hopkins University, under public health administration, an elective course in child hygiene is offered 2 afternoons a week for half a year, which includes lectures on the historical development of child health work in the United States and in foreign countries and the present purposes and methods of child hygiene activity. There are demonstrations and field work through milk stations, open air schools, schools for correction of defects, tuberculosis, and so forth.

Students are required to attend field demonstrations of child hygiene activities and are assigned topics for study. This is a comprehensive course and covers quite completely the entire range of child hygiene.

At the Harvard School of Public Health there is a course on child hygiene 3 mornings a week for 4 months with field work taking all day for 4 months. This field work is done in conjunction with the course on public health administration. The time of the course is devoted to the general discussion of the subject of child hygiene including a considerable amount of work on normal growth and development. Students are given a chance to observe various phases of child hygiene work, prenatal clinics, postnatal clinics, child welfare clinics, and work among school children, and also with special groups such as the handicapped, feebleminded and blind presented through the work of special institutions dealing with each group. There are also two other elective courses in child hygiene for students who have completed the first course in which intensive work may be had in the various branches of child hygiene or in which research in some particular subject may be undertaken.

From a consideration of the type of instruction offered in the graduate schools of medicine and in the universities and in schools of public health it is obvious that there is a widespread recognition of the importance of work with children and that certain phases of the subject receive adequate presentation. It is equally clear that except in 2 instances there is no evidence of a comprehensive vision of what child hygiene means. It would seem not out of place to state briefly some of the fundamental considerations which should be recognized by anyone who wishes to perfect himself or herself in this phase of public health work.

Child hygiene is the offspring of two definite aspects of medical work. In the first place, it is directly and intimately connected with pediatrics. It has to do with everything which concerns the well child, especially with normal growth and development and their determining factors. In the second place, in its practical aspects it is an important department of public health administration. It is, of course, true that a great deal of valuable child hygiene work has been and is being done under auspices other than public health authorities, federal, state, or municipal, but, nevertheless, from an organization point of view it is and should be a part of organized public health work.

Because of this double origin of child hygiene it follows that the leaders in child hygiene must have adequate training in both pediatrics and public health administration with its related subjects

of vital statistics and sanitary engineering. In the past child hygiene has been inadequately taught in our medical schools and its importance insufficiently recognized in pediatric departments. Fortunately at present almost all of the pediatric departments in the medical schools in this country and Canada recognize the importance of child hygiene or preventive pediatrics, as it is frequently called, and students receive a considerable amount of, although necessarily inadequate, instruction in this phase of work with children.

There is obviously a need for more comprehensive courses in child hygiene in connection with the postgraduate departments of medical schools and universities and the schools of public health. Distinct child hygiene departments should be established which would develop opportunities for study of the whole field.

From an administrative point of view in the past the direction of child hygiene work has been intrusted too often to lay persons whose only qualifications were based upon interest in and sympathy for children, or to trained nurses who have had no more special training in work with children than is given in a small children's ward in a general hospital. The time has passed when child hygiene can be linked in administrative work, with public health nursing, or any other division of a public health department. Child hygiene deserves a division of its own presided over by an adequately trained physician who has had special postgraduate work in pediatrics and additional training in public health administration. Until the important positions in child hygiene are filled by persons of such training child hygiene work will continue to be unsatisfactorily done. In order to train such individuals we must demand an increasing amount of preliminary medical education, particularly specialization in the field of pediatrics, and several years of special study including practical experience in the field.

SUMMARY

Instruction in child hygiene may be obtained at the present time under 3 auspices. First, in postgraduate work in pediatrics conducted by various medical schools. These courses do not deal with child hygiene as such, but a considerable amount of valuable information concerning well children and normal growth and development is presented. For further details one should consult the report on pediatric education prepared by Dr. Borden Veeder for the White House Conference on Child Health and Protection.

Second, in connection with undergraduate and postgraduate instruction in certain special schools in various universities. These courses are also fragmentary, considering various aspects of the child hygiene problem but not attempting in any way to cover the entire field of child health. The better organized of these courses are as follows:

At Yale courses on infant welfare, school hygiene, and municipal health department activity.

At the University of Toronto, a course in school hygiene.

At Columbia University, courses in preventive medicine and public health administration, school health inspection, and school health supervision.

At the University of Minnesota, a course in child welfare.

At the University of Iowa, courses on child development, nutrition, and child psychology.

At the Massachusetts Institute of Technology and Boston University, courses on health education.

Third, fairly complete but somewhat superficial courses in connection with schools of public health at Johns Hopkins and Harvard.

Good Eyesight in Industry

IN my organization, during 8 years, approximately 11,000 pairs of eyes were examined at the Pullman Car Works, with 25,843 separate visits. Of these, 42 per cent achieved normal vision (some had normal vision while others required glasses to make them normal). Fair vision was obtained in 37 per cent with or without glasses. This makes 79 per cent with good or fair vision in both eyes, leaving 21 per cent with poor or bad vision in one eye or both, that glasses could not help. Of this 21 per cent, 0.6 per cent were one-eyed men.

This does not mean that 21 per cent had at least one bad eye since some of the examinations were preëmployment and were rejected, others were employees of interlocking companies and others were pensioners.

Good eyesight obviously reduces the employer's compensation payroll and also the salvage bill. This far overshadows the cost of medical care and the cost of protective goggles—not to speak of the humanitarian phase of the question.

The eye requirements at selected positions in an industrial plant are summarized in a table from which the following excerpts are taken:

Without glasses, crane operators should have a vision of 20/30 or better while transportation employees should have 20/20 in addition to color tests. Other employees involving machinery, woodworking, welding, etc., should have 20/40. *With glasses*, transportation employees should have 20/20, transfer table employees 20/20 one eye, 20/30 the other, while all the other groups mentioned should have 20/30.—

Herman P. Davidson, *Sight-Saving Rev.*, 1, 4: 38–41 (Dec.), 1931. E.R.H.

Food Poisoning Due to Toxic Substances Formed by Strains of the Cloacae-Aerogenes Group*

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AN increasing variety of bacterial species including *B. cloacae, B. proteus,* and staphylococci, is being found to incite gastrointestinal disturbances following the consumption of food containing these microörganisms or their toxic products, as is exemplified by the work of Buchanan and Megrail,[1] Bengston,[2] Baerthlein,[3] Ilsley,[4] Dack and his coworkers,[5] Jordan,[6] Ramsey and Tracy,[7] and Barber.[8]

Early in October, 1930, an outbreak of gastroenteritis attributed to cream-filled pastry occurred, the outstanding epidemiological features of which were described in *Public Health News* of New Jersey[9] and *Health News* of New York.[10] At least 125 cases were reported to have developed on 2 successive days in an area approximately 20 miles square, those occurring on the first day being confined chiefly to the southern part of the district. The symptoms were said to have been manifested in every case within a few hours after the eating of either cream puffs or chocolate éclairs manufactured by a wholesale bakery. A few of those who ate the pastry noticed a metallic or gaseous taste, but most of them did not report any unpleasant taste or odor. The illness was characterized by violent and prolonged nausea and vomiting, followed by a profuse diarrhea and, in some instances, cramps affecting the leg muscles. No rise in temperature was noted. The symptoms generally subsided in from 4 to 10 hours. The description of the cases occurring on the second day indicated that they were markedly more severe than those of the first. In fact, the administration of morphine was required in many instances.

The bakery was visited by a member of the laboratory staff on the day following the outbreak. It was in a concrete building which

* Read before the Laboratory Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 17, 1931.

appeared to be so constructed that few rats and mice could gain entrance. Traps, but no poisons, were used. The work rooms and all utensils were scrupulously clean, and containers had properly fitting covers. The method of preparing the cream filling was as follows: Eggs, cornstarch, and milk powder were mixed, poured into a sugar solution previously heated, and cooked with constant stirring until thick. The material was heated to approximately 100° C., but was kept at this temperature for only a very short time, then left in a covered, tin mixing-bowl, at room temperature, for 4 or 5 hours before the shells were filled. The pastries were kept in a refrigerator overnight and distributed by automobile truck on the following morning.

The eggs were obtained from a firm which handles "cracked eggs," which are removed from the shells, put in tin cans, and distributed to bakeries, restaurants, etc. The eggs used on the second day were said to have been taken from a half-filled can which had been in the refrigerator overnight. None of this lot was available for examination and the can in which they were shipped had been discarded.

Six specimens were secured of cream puffs and chocolate éclairs, some of which were portions of those eaten by individuals who were ill. Unfortunately, only those distributed on the second day were available. Fecal specimens were obtained from 7 patients. Examination of the filling failed to show evidence of chemical poisons. None of the species generally associated with enteric disease were found in any of the specimens. *Staphylococcus aureus* was present in large numbers in the cream filling of the 6 pastry specimens and was also found in 2 fecal specimens.

In a study of a representative strain of these organisms isolated from the filling, a monkey was fed with 5 c.c. of a 48-hour culture grown in medium containing ingredients similar to those used in the pastry filling; a guinea pig and a mouse were inoculated intraperitoneally with 2 c.c. and 1 c.c. respectively of a filtrate from it; a rabbit was inoculated intravenously with 3 c.c. of this filtrate, and another with the same amount of the filtrate from a broth culture. None of the animals showed any evidence of illness.

From 5 fecal specimens and from the filling of 5 cream puffs or éclairs large numbers of nonmotile, Gram-negative, encapsulated bacilli were isolated, the growth products of which proved toxic for certain animals. The biochemical reactions indicate that the strain belongs to the cloacae-aerogenes group, although it does not correspond

exactly to any species for which a description could be found. With one possible exception, no evidence of motility has been demonstrated. Two stained films of one culture, however, have shown monotrichous

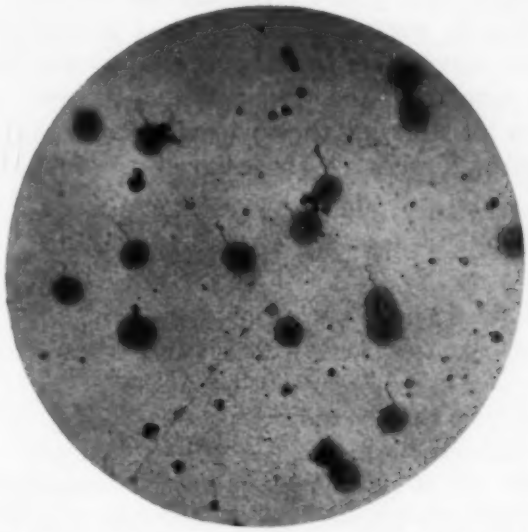

PLATE I—ORGANISMS SHOWING CAPSULES AND MONOTRICHOUS FLAGELLA. × 1,000 DIAMETERS.

flagella (see plate I). Dextrose and lactose are fermented, at least three times as much gas being produced in the former and about twice as much in the latter as is formed by *B. coli*. Saccharose, maltose, mannitol, glycerol, inositol, and starch are also fermented, while dulcitol and adonitol are not. The majority of the strains liquefy gelatin very slowly, requiring from 8 to 14 weeks at from 35° to 37° C. Litmus milk is acidified and coagulated; indol is not produced. Acetyl-methyl-carbinol can be demonstrated in dextrose broth (Voges-Proskauer positive) after 24 and 48 hours' incubation, but not after a longer period; the reversion of reaction in 0.5 per cent dextrose-phosphate-peptone solution (methyl-red negative) is rapid, occurring within 24 hours. As our experience would indicate that this group of organisms is not frequently found, in considerable numbers at least, in human feces, the presence of the particular strain described in 5 of 7 of the stools from persons ill following the eating of the cream puffs is of significance.

Antiserum produced with 1 strain (No. 328) isolated from the cream-puff filling agglutinates to its full titer the other 9 strains. With one exception, no appreciable reaction with other available strains of the cloacae-aerogenes group was obtained. A culture isolated in the branch laboratory in New York City from cream-pie

filling, to which were attributed 2 cases of food poisoning in 1 family, was agglutinated to one-half the titer of the antiserum. This culture is motile and differs slightly from No. 328 in biochemical reactions. It liquefies gelatin rapidly and ferments dulcitol but fails to ferment glycerol and starch; acetyl-methyl-carbinol is demonstrable in dextrose broth for 7 days. Its toxicity has not as yet been determined.

A medium similar to the pastry filling, as well as beef-infusion broth, was used for studying the toxigenicity of strain No. 328. The custard medium was prepared according to the following formula:

CUSTARD MEDIUM

225 c.c.	Milk
100 c.c.	Water
53 gm.	Saccharose
15 gm.	Cornstarch
0.5 gm.	Sodium chloride
1	Egg
3 c.c.	Vanilla extract

Place the milk and 80 c.c. of water in a double boiler and heat until a scum forms. Mix the sugar, cornstarch, and sodium chloride with the remainder of the water and add the well beaten egg. Combine with the hot milk and cook slowly until thick. Distribute in flasks or tubes and sterilize in an autoclave at 115° C. for 20 minutes.

Unless otherwise stated, all cultures of No. 328 used for feeding or inoculation were incubated for 24 hours, while filtrates tested for toxicity were obtained from 48-hour cultures. No evidence of toxicity for mice or guinea pigs was observed following the feeding of custard-medium culture or subcutaneous inoculation with broth culture. Intraperitoneal inoculation with 1 c.c. of broth culture was followed in mice by diarrhea within 1 hour, and by death of both mice and guinea pigs within 24 hours; animals of both species remained alive and well after similar inoculation with culture filtrates.

A monkey was fed approximately 5 c.c. of a 48-hour culture in custard medium, subsequent to which diarrhea, but no other symptoms of illness, was observed. Two hens fed custard-medium culture and 1 inoculated intravenously with broth culture developed diarrhea within from ½ to 3 and 6 hours, respectively. Rabbits inoculated intravenously with from 0.1 c.c. to 5 c.c. or fed with from 2 c.c. to 5 c.c. of filtrate from the custard-medium culture developed diarrhea within from 15 minutes to 6 hours, but usually recovered.

Similar results were obtained with this material after it had been heated to 100° C. Broth-culture filtrates caused diarrhea when given intravenously, but no symptoms were observed after feeding such

filtrates to rabbits. A kitten fed about 20 c.c. of a 24-hour culture grown in the custard medium showed no ill effects.

The epidemiology clearly points to cream puffs and chocolate éclairs as the source of intoxication. Since the cream filling was said to have been prepared each morning, a common vector is indicated. All the ingredients except the eggs and water were dry and it was understood that portions of material from the same lots were used both before and after the outbreak.

The data suggest, therefore, that the etiological agent might have been introduced by means of the eggs, which may have been contaminated from the shells, the persons removing them from the shells, or some other source. Although the mixture was cooked after the eggs were added, it is conceivable that a portion of the custard, especially that adherent to the kettle near the top, may not have been heated sufficiently to destroy the bacteria. Furthermore, if the toxin of the organisms of the cloacae-aerogenes group described had already been formed, it might not have been rendered inactive by the method of cooking employed.

While the pastry was said to have been kept in the refrigerator overnight, ample time elapsed for incubation of the bacteria during the 4 or 5 hours the cream filling was left at room temperature before the pastry shells were filled, and again the following day when the finished products were being distributed by truck, the temperature being unusually high for that season.

The highest standards of cleanliness cannot prevent contamination of food from dust, utensils, egg shells, and other similar sources which are known to harbor numerous so-called saprophytic microorganisms. Certain of these bacteria, in themselves innocuous, under favorable conditions produce substances which, if ingested, may prove markedly toxic. The frequent reports of outbreaks of food poisoning following the consumption of pastries containing cream-custard filling suggest that this material—possibly owing to the egg content—furnishes an excellent medium for the development of harmful bacterial products. Although the subjection of these foods to temperatures necessary for sterilization is not practicable, the production of toxic substances can be averted by continuous refrigeration during the brief period before distribution to the consumer.

The handling and refrigeration of "cracked eggs" may need more careful supervision. It seems important that steps be taken to control the preparation and distribution of all cream-custard food products, as well as to disseminate information to the public to insure necessary precautions on the part of the consumer.

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Dental Research

AN important symposium on the cause and nature of tooth decay was held June 23 in Pittsburgh, at the Frick Training School, under the auspices of the Pittsburgh Section of the International Association for Dental Research. The main papers were presented by Dr. H. E. Friesell, Dean of the University of Pittsburgh School of Dentistry, and Dr. J. J. Enright, a research specialist of Mellon Institute. These contributions gave the first complete account of the results of the comprehensive scientific investigation of tooth decay or dental caries that has been in progress at the University of Pittsburgh during the past nine years.

In the reading and discussion of the papers by Drs. Friesell and Enright it was brought out that the new additions to dental knowledge resulting from this broad investigation were as follows: first, the determination of the effects of acids on tooth enamel under natural conditions; secondly, the discovery of the relation of the calcium phosphate content of the saliva to tooth decay; thirdly, the identification of the lactobacilli that cause tooth decay; and, fourthly, the description, in a preliminary way, of the results of a clinical study that demonstrated that an oral prophylactic program efficient in reducing the massive lactobacilli infection of the dental zone decreased by 66 per cent the amount of new tooth decay developing in a year.

Inter-Chamber Health Conservation Contest*

CHARLES W. GOLD

Chairman of the United States Chamber of Commerce Health Conservation Contest Committee

THIS closes the third year of the Inter-Chamber Health Conservation Contest which has been fostered and conserved by the Insurance Department of the United States Chamber of Commerce. Through the generosity of insurance companies it has been possible for representatives of the American Public Health Association to visit cities entered in the contest and discuss their community health programs. When the contest was started in 1929 it was announced that the purposes were two-fold: First, to acquaint citizens, particularly business men, with the work of their local health agency, and their communities' local health problems, with a view to bringing about improvements which would mean economic gain, for certainly community security and community comfort are real assets. Second, to provide an additional means for reducing preventable illness and untimely death. Each community must be measured eventually by the intelligent effort which it makes for a solution of these problems. While results of the contest with respect to the second purpose cannot yet be fully measured, yet insurance statistics show that there is an improvement in mortality from preventable diseases, and this of course is a factor in carrying out the first objective.

Among the many general collateral benefits resulting from the contest we find first, dissemination of general information on public health; second, the coördination of the work of local health agencies, thereby tending to eliminate overlapping activities and to stimulate concerted efforts on local health needs; and third, the keeping of records in better form and so that they are comparable with those of other communities. In addition to those general results there are also in many instances specific local accomplishments conferring immediate and lasting benefits on the community. While the Health Contest is not claimed to have been the only factor in making such accomplish-

* Presentation of Awards to the winning cities in the 1930 Health Conservation Contest at the Annual Meeting of the Chamber of Commerce of the United States at San Francisco, Calif., May 20, 1932.

ments possible, it has provided the occasion for doing those things which previously were being considered and which lacked the influence and propelling force supplied by the Chamber of Commerce Health Committee.

Leading examples of recent improvements in public health, in the effectuation of which numerous local chambers of commerce have had a definite part, include: measures for improvement of milk supply; initiation of diphtheria immunization programs; periodic health examinations; surveys of public health activities; sanitary improvements; and medical examination of school children. Among other definite activities are those bringing about better coöperation between local practising physicians and health agencies, the establishment of many health services to include rural and urban districts. Such specific advances as new sanitary codes, movements for malaria control, new tuberculosis sanatoriums, etc., are but yard-sticks by which to measure the general advance.

The illustrations just mentioned indicate that chambers of commerce recognize the improvement of their communities' public health as a matter of interest to citizens. Let it be understood that the chambers in no way are interested in usurping the activities being carried on by their local health agencies. They are acting as coöperating bodies which make possible definite accomplishments which would be difficult or well nigh impossible for the local health agencies if left alone. The health activities being carried on by local chambers as they participate in the Inter-Chamber Health Conservation Contest are sometimes hard to measure in a tangible way; nevertheless, business and industry are coming to recognize more and more the fact that improvements in public health do produce economic gains.

The 1931 Contest has been the most successful of any of the contests during the 3 years of their existence. An increase in 1931 of more than 27 per cent in enrollment over that for 1930, 265 cities located in 45 states, the District of Columbia, and Hawaii, being represented, shows real progress. It is noteworthy that, even though the requirements in 1931 for a full score were made considerably more exacting, more than 70 per cent of the cities in the Contest for both 1930 and 1931 made higher scores for the latter than for the former year—and if allowance is made for the higher requirements there would be more than 90 per cent of these cities with higher scores in 1931.

The Board of Judges in rating the various cities in the 1931 Contest for the 6 population groups named a winning city, with 5 others

in each group being given honorable mention. An exception is that in Group V, 6 honor cities were named. These 37 award cities were located in all parts of the country. The State of New York led with a total of 6, California and New Jersey coming next in order with 5 each, followed by Wisconsin with 4, and Illinois with 2 winning cities.

As a Director of Insurance of your National Chamber of Commerce and as chairman of your departmental committee of insurance, may I be permitted to urge that each local chamber of commerce take a special interest in this health conservation work. We are asking for a closer tie-up between the city and county health departments and the local chamber, the idea being that this Inter-Chamber Health Contest will bring a standardization of requirements as to health facilities.

It is now a pleasure to give you the names of winning and honor cities in each of the population groups and, to the winner in each group, present a plaque in recognition of its activities and achievements in health conservation. In passing, may I, however, state that among those cities designated as leaders, in many instances the difference in score was very slight, as was also the margin of score for some of the honor cities over those standing immediately next to them. To the honor cities engraved certificates have been sent.

In population Group I—cities more than 500,000 population—the following, according to alphabetical order, are the award cities:

Baltimore, Md.
Detroit, Mich.
Milwaukee, Wis.
Philadelphia, Pa.
Pittsburgh, Pa.
St. Louis, Mo.

Milwaukee, which won in 1929, is again the winner in 1931.

Of Group II cities—between 250,000 and 500,000 population—the following are award cities:

Cincinnati, O.
Kansas City, Mo.
Minneapolis, Minn.
Newark, N. J.
Rochester, N. Y.
Toledo, O.

Rochester, for the past 2 years has been an honor city and now it stands first.

Cities in Group III—100,000 to 250,000 population—showed the following award cities:

Grand Rapids, Mich.
Hartford, Conn.
New Haven, Conn.
Syracuse, N. Y.
Utica, N. Y.
Yonkers, N. Y.

Group III is the only group in which a city has been a winner for 2 successive years. New Haven stands in first place.

Award cities in Group IV—50,000 to 100,000 population—are as follows:

East Orange, N. J.	Kenosha, Wis.
Evanston, Ill.	Pasadena, Calif.
Harrisburg, Pa.	Racine, Wis.

In this group we find Evanston one of the 2 winning cities from the State of Illinois, as the leader.

Group V—cities between 20,000 and 50,000 population—showed the following in the award group:

Alhambra, Calif.	Orange, N. J.
Brookline, Mass.	Watertown, N. Y.
Maplewood, N. J.	West Orange, N. J.
Newburgh, N. Y.	

Brookline, Mass., participated in the 1931 Health Contest for the first time and was the winning city in its group.

Group VI cities in the Contest included all those under 20,000 population. The award cities were as follows:

Chestertown, Md.	Monrovia, Calif.
La Salle, Ill.	Palo Alto, Calif.
Lodi, Calif.	Shorewood, Wis.

In this group, another Illinois city, La Salle, is the first award city. La Salle during the first 2 years of the Contest was also an honor city. Efforts each year have rewarded it with first place in 1931.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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THE WESTERN BRANCH MEETING

THE third annual meeting of the Western Branch of the American Public Health Association was held June 9, 10 and 11, with headquarters at the Brown Palace Hotel, Denver, Colo. The meeting was well attended, with a registration of 230. There was an excellent selection of papers on practically every phase of public health. Naturally many of these referred to conditions which are particularly prominent in our western states, and along the Pacific Coast, though all of them were interesting from the public health standpoint, and many of them had a country-wide bearing. There is no question that the growth of the Western Branch in the three years of its existence has been phenomenal, and that it is playing a dominant part in the direction of public health opinion in the West as well as its expression in print and its carrying out in practice.

There was but one observable drawback to the meeting; namely, the absence of men from the East, a number of whom were on the program, but prevented from coming for one reason or another, largely on account of the depression, including the expense of travel and absence from office work.

A feature of the meeting was a garden party given by that dean of tuberculosis workers, Dr. Henry Sewall, and his charming wife. All

those in attendance at the Western Branch meeting as well as those who had attended the meeting of the National Tuberculosis Association in Colorado Springs, which immediately preceded, were invited, and many enjoyed the privilege of meeting Dr. and Mrs. Sewall as well as partaking of their gracious hospitality. Both Colorado Springs and Denver were at their best. There was still a good deal of snow on the mountains, and nature did all she could to make things entrancing.

The meeting of the National Tuberculosis Association was unexpectedly well attended, the registration being so large (550) that the programs ran short. Again, however, there was a notable absence of members and delegates from the eastern states. On Tuesday, June 7, a joint meeting with the Colorado State Society was held at the Broadmore Hotel and a dinner, attended by more than 300, was given in honor of the 50th Anniversary of the discovery of the tubercle bacillus by Robert Koch. Both meetings were most enjoyable. The people in both cities were hospitable to the last degree, and it is safe to say that all who had the good fortune to be present carried away delightful memories in addition to the scientific knowledge acquired from the reading of papers.

CHARLES V. CHAPIN, M.D.

THE resignation of Dr. Charles V. Chapin as Health Officer of the City of Providence, R. I., after 48 years of service, calls for more than passing notice. With no disrespect to anyone, it may be said without any fear of contradiction that Dr. Chapin has occupied for many years the position of Dean of City Health Officers.

During his service he introduced many new practices, the most important perhaps being the doing away with terminal disinfection. After a series of careful experiments, with and without terminal disinfection, he decided that it was an expense which was not justified. Since that time many cities have followed his lead. While he was not a prolific writer, his book, *The Sources and Modes of Infection,* has been for many years a standard.

Dr. Chapin could have had any honor which he desired, but with a sincere and unusual modesty he combined a rather frail physical make-up, so that many were declined. He could have been President of the American Public Health Association at any time he cared to signify his willingness to accept the honor. Finally in 1927 he was persuaded to do so, and the Association felt itself honored in having

him serve. He was the first recipient of the Sedgwick Memorial Medal and no committee ever made a selection which received more unanimous approval than this. One of the last honors done him was a resolution adopted in December, 1931, just when he was about to relinquish his office, changing the name of the Providence City Hospital to the Charles V. Chapin Hospital.

It is not flattery to make the statement that there is no member of our Association who for so many years has retained the admiration, respect, and affection of its membership. We wish him all happiness in his quiet home with Mrs. Chapin who, as all of us remember, came with him regularly to the meetings of the Association which he was able to attend.

THE FOLGER SHAKESPEARE LIBRARY

CURTIS HODGES
Executive Director, Greater National Capital Committee, Washington, D. C.

A NEW attraction in Washington, and one that is drawing literally thousands of visitors each week, is the Folger Shakespeare Library, unexcelled for the architectural beauty of its building and its rare collection of Shakespeareana. It is a 10-million-dollar institution made possible by the beneficence of Henry Clay Folger, prominent business executive who devoted large

Folger Shakespeare Library, Washington, D. C.

sums of money and many years of personal effort to its perfection.

Through more than five decades, Mr. Folger day by day and month by month accumulated the most valuable and useful mementos of Shakespeare to be found on both sides of the world, and this vast collection is now housed in the new snow-white building directly across from the Congressional Library. This noble structure in its carefully cultivated lawn and with its marvelous and dignified shrubbery, takes a high place among the worthwhile sights of Washington.

Entrance to Exhibition Hall
Folger Shakespeare Library

Its dedication on Saturday, April 23, was attended by dignitaries, savants, and leading men from all walks of life, and all gave the new institution extravagant praise. The words of Walter Prichard Eaton, essayist and critic, pronounced on the day of the dedication are peculiarly apt:

"All scholars will rejoice that the Folger collection is made available and it should be a matter of pride to all of us that the library which houses it is in the National Capital, marking one more step in the development of that city, not only toward a place of civic beauty but of intellectual wealth."

The Folger Library is situated on East Capitol Street between Second and Third Streets, the site having been selected personally by Mr. and Mrs. Folger. To build the library there, it was necessary to raze 14 houses, and the procedure of obtaining titles to these buildings required 9 years. Alexander B. Trowbridge was the consulting and supervising architect and Paul P. Cret was the architect.

The building is of glistening white marble and is noted for its simplicity in design. In size, it is not comparable to the other large buildings of Washington, but it has a distinctive charm.

"I did think of placing the Shakespeare Library at Stratford near the bones of the great man himself but I finally concluded I would give it to Washington; for I am an American." These were the words of Mr. Folger.

And as a result of Mr. Folger's imagination, his ability, and his loyal American spirit, the people of this nation have a new shrine in their national city.

LETTER FROM GREAT BRITAIN

A PIONEER IN FACTORY HYGIENE

BY the death of Sir Thomas Legge, preventive medicine has lost one who in his day was responsible for many contributions of real value, in the realm of industrial hygiene especially.

During the years he acted as Senior Medical Inspector of Factories at the Home Office, a position he succeeded to on the retirement of Sir Arthur Whitelegge, he sought in every way possible to secure healthy conditions for the industrial worker. Particularly he sought to have introduced every available measure that research and experience showed to be essential as a protection to health and a preventive of injury or disease. In these regards he endeavored to promote coöperation between all parties concerned, including employers and employees, and he was all for placing the main control in the hands of the Factory Department.

Actually he had little use for local health authorities, and one of his strongest convictions was that the less the medical officer of health was given to do with factories and the health of the factory worker the better it would be for everybody.

The absence of direct relation between the Factory Department and the Ministry of Health was an arrangement of which he entirely approved. He rarely missed an opportunity, either before or after his retirement from office, of saying so. Nor did he hesitate to assert that industrial hygiene and trade diseases and poisonings were matters so definitely for the specialist that no ordinary medical practitioner should be allowed to give even the most elementary addresses upon them to a popular audience. This rather uncompromising attitude of mind was typical of the man and was responsible for his resignation of his post of Senior Medical Inspector, the ground being that certain regulations issued by the Home Office with regard to the prohibition of the use of white lead for the internal painting of buildings did not go so far as he believed they should, having regard to the recommendations of the 1921 International Convention at Geneva.

After his retirement Sir Thomas Legge continued to take a great interest in industrial affairs, associating himself with the work of the Trades Union Congress, the Industrial Health Education Society and other bodies.

He was extremely keen on teaching and made himself responsible for some part of the instruction given to students on industrial hygiene and diseases at the London School of Hygiene. This work will now be carried on by Dr. Middleton of the Factory Department, who, among other matters, has devoted a great deal of time and study to the subject of pulmonary silicosis.

CUTS IN THE HEALTH SERVICES

UP to the present, as a result of the economic situation, the amount of interference with health activities, national and local, has been comparatively slight. Indications that this state of affairs is not likely to continue appear from time to time, however, in the public statements of members of the Government and otherwise.

The Minister of Health himself rather unexpectedly, since it is not so long ago that he pointed with some pride to the

smallness of the cuts in health expenditure, recently made a strong appeal to all local authorities to adopt as a policy the postponing of all forms of capital expenditure not essential for the public health or in relation to any other question of general public necessity. Giving it as his opinion that things had been placed on lines that would lead to prosperity, he still thought that the proper course was to restrain public expenditure wherever with safety it could be restrained, in order to increase the funds available under the control of private enterprise for the restoration and expansion of the essential industries of the country.

The view that there are vast possibilities of saving by way of cuts in social services appears to be widely held, particularly by the newer and younger members of Parliament. The big changes that took place in the personnel of Parliament following the recent election have been responsible for a number of happenings that must have caused distress and annoyance to persons accustomed to a more or less uniform procedure no matter what party happened to be in power.

So many of the new people are young and in a hurry that, without troubling to learn or thinking of consequences, they dash at things and make demands that to the old fashioned appear outrageous. More especially many of the newer and younger people are a little inclined to regard Parliament and the central governing body as a great deal more powerful and superior to the local bodies than is actually the case. Public health, for example, always regarded as much more of a local than a central concern, has been more definitely so regarded since the passing of the Local Government Act, 1929; and, even if it could, Parliament directly or through the government departments interferes very little. This many of the newcomers to Parliament apparently do not know. If they did they probably would not, as some have done, talk about restrictions upon the freedom of action of local authorities in carrying out statutory duties, and thus run the risk of rousing the resentment of these authorities, even in the interests of what they describe as "public economy."

Doubtless savings could be effected if duties were limited or restrictions were imposed; but so they could if restrictions were removed in certain cases. Annually, for example, large sums must be spent by local authorities on housing and slum clearance, and if something could be done to reduce expenditure in this direction the public purse might, though the public health might not, benefit.

LONDON'S WATER IN 1931

THIS is the season when annual reports begin to make their appearance. One of the most interesting just come to hand is that of Sir Alexander Houston, Director of Water Examination to the Metropolitan Water Board.

Issued primarily to give the results of the chemical and bacteriological examination of the London waters for the previous 12 months, during recent years, at any rate, these reports of Houston's have provided him with an opportunity of singing songs in praise of the beauty of the rivers Thames and Lee from which the metropolis obtains the bulk of her water supply. In general also the descriptions are illustrated with most attractive photographs and extracts from the poetry and prose writing lovers of the river.

Even in the more technical portions of his report Sir Alexander is unable to resist digression, and a reference to a search for the *Bacillus typhosus* in some particular sample is as likely as not to lead him into a discussion of and an ex-

pression of view upon some historic epidemic of enteric.

The report for the year 1931, although "owing to financial considerations" its scope had to be greatly curtailed, presents all the familiar features, the practical and technical being lightened by much talk of the County of Essex, and a description of a journey through Epping Forest to Epping, where an outbreak of paratyphoid fever occurred in the early part of 1931. Having found that this was due to contaminated milk and not to the water for which he is responsible, Sir Alexander devotes a number of pages to a discussion of the advantages of the pasteurization process as applied to milk. Also he expresses astonishment at the lowness of the bacterial standards prescribed in the case of milk, and as regards purity compares that liquid most unfavorably with that with which he himself is more intimately concerned.

A report of water examinations could, I imagine, be an immensely dull production. In the hands of Sir Alexander Houston it becomes, both to the expert and the general reader, worth the price —approximately $2.00—at which it is offered.

CHARLES PORTER, M.D.

London

ASSOCIATION NEWS

Sixty-first Annual Meeting of the A.P.H.A.
Washington, D. C., October 24–27, 1932
Headquarters, Willard Hotel

ANNUAL MEETING INFORMATION

REDUCED RAILROAD FARES

REDUCED railroad fares on the Identification Certificate Plan have been authorized by the several Passenger Associations in the United States and Canada, which will entitle all members and dependent members of their families to a special rate of a fare and one-half for the round trip to Washington.

Under this plan an Identification Certificate *must be presented* to the ticket agent when purchasing tickets. (One will be mailed to every member of the Association about September 10.) This is the ticket agent's authority to issue to delegates and dependent members of their families a round-trip ticket to Washington at the reduced rate. All return tickets must be validated, before leaving Washington, at the regular railroad ticket office.

It is suggested that all members consult their local ticket agents in regard to dates of sale as they vary according to distance from Washington.

The final return limit is 30 days in addition to date of sale. Delegates may travel to and from Washington via the same route or via diverse routes, as they prefer, without additional cost.

RAILROAD RATES FROM VARIOUS CENTERS TO WASHINGTON, D. C.

	Regular Rate One-Way	Special Rate Round Trip *Fare-and-a-Half Basis*		Lower Berth One-Way	Upper Berth One-Way
Atlanta, Ga.	$22.97	$34.46		$7.50	$6.00
Baltimore, Md.	1.44	2.16	Seat, .75		
Boston, Mass.	16.40	24.60	Seat, 3.38	5.63	4.50
Buffalo, N. Y.	15.71	23.57		4.50	3.60
Chicago, Ill.	27.78	41.67		8.25	6.60
Cincinnati, O.	20.15	30.23		5.63	4.50
Cleveland, O.	15.63	23.45		4.50	3.60
Dallas, Tex.	50.42	75.63		15.38	12.30
Denver, Colo.	65.06	97.59		18.00	14.40
Detroit, Mich.	21.55	32.33		6.38	5.10
Duluth, Minn. (via Chicago)	44.19	66.29		12.75	10.20
Fort Worth, Tex.	51.56	77.34		15.38	12.30
Indianapolis, Ind.	24.10	36.15		7.50	6.00
Jacksonville, Fla.	28.41	42.62		8.63	6.90
Kansas City, Mo.	42.58	63.87		12.00	9.60
Los Angeles, Calif.	103.07	154.61		31.50	25.20
Louisville, Ky.	23.72	35.58		7.50	6.00
Memphis, Tenn.	33.57	50.36		10.13	8.10
Minneapolis, Minn.	42.44	63.66		12.00	9.60
Montreal, Que., Canada	22.15	33.23		6.38	5.10
Nashville, Tenn.	26.61	39.92		9.00	7.20
New Orleans, La.	40.20	60.30		12.00	9.60
New York, N. Y.	8.14	12.21	Seat, 1.88	3.75	3.00
Omaha, Neb.	45.71	68.57		12.75	10.20
Philadelphia, Pa.	4.90	7.35	Seat, 1.13	3.01	2.41
Pittsburgh, Pa.	10.90	16.35	Seat, 2.25	3.75	3.00
Portland, Ore.	104.99	157.49		31.50	25.20
Salt Lake City, Utah	82.85	124.28		23.63	18.90
San Francisco, Calif.	103.07	154.61		31.50	25.20
Seattle, Wash.	104.99	157.49		31.50	25.20
St. Louis, Mo.	32.54	48.81		9.00	7.20
Brandon, Man., Canada	61.14	91.71		16.50	13.20
Calgary, Alb., Canada	82.85	124.28		24.75	19.80
Charlottetown, Pr. E. I., Canada	40.25	60.38		10.50	8.40
Fredericton, N. B., Canada	32.50	48.75		10.13	8.10
Hamilton, Ont., Canada	18.03	27.05		5.63	4.50
Harbor Grace, Newfoundland	71.85	107.76		15.25	12.20
Halifax, N. S., Canada	42.05	63.08		13.88	11.10
Juneau, Alaska	124.24	186.30		31.88	25.50
Kenora, Ont., Canada	46.78	70.17		15.63	12.50
Kentville, N. S., Canada	43.31	64.97		10.50	8.40
Ottawa, Ont., Canada	25.80	38.70		7.88	6.30
Port Arthur, Ont., Canada	46.78	70.17		12.83	10.25
Quebec, Que., Canada	27.77	41.66		8.25	6.60
Saskatoon, Sask., Canada	73.85	110.76		21.75	17.40
St. John, N. B., Canada	33.35	50.03		10.50	8.40
Toronto, Ont., Canada	19.38	29.07		5.63	4.50
Three Rivers, Que., Canada	26.82	40.23		8.25	6.60
Vancouver, B. C., Canada	104.99	157.49		31.88	25.50
Winnipeg, Man., Canada	57.60	86.40		16.50	13.20

WASHINGTON HOTEL RATES

Hotel	Room Capacity	Single Room		Double Room	
		Without Bath	*With Bath*	*Without Bath*	*With Bath*
Ambassador	500	$2.50	$3.00–$4.00	$4.00	$5.00–$6.00
Annapolis	400	....	2.50– 4.00	....	4.50– 6.00
Blackstone	100	....	3.00– 3.50	....	5.00– 6.00
Burlington	200	3.00	2.50– 3.00	3.00	3.50– 4.50
Cairo		2.00– 2.50	2.50– 3.00	2.50– 3.50	4.00– 5.00
Capital Park	150	2.00	2.50– 3.00	3.00	4.00– 6.00
Carlton	400	....	4.00– 7.00	....	6.00–10.00
Commodore	150	2.00	2.50– 3.00	3.00	4.00– 5.00
Continental	250	2.00	2.50	3.00	4.00
Dodge	250	2.50– 3.00	3.00– 5.00	4.00	5.00– 8.00
Driscoll	200	2.00	3.00	3.00	5.00
Ebbitt		....	2.00– 3.00	....	3.00– 5.00
Francis Scott Key Apartments	100	....	2.50	....	3.50– 5.00
Hamilton	300	2.50	3.00– 3.50	4.00	5.00– 6.00
Harrington	200	2.00	2.50– 3.50	3.00	3.50– 6.00
Hay-Adams	200	....	4.00– 6.00	....	6.00–10.00
Lafayette		....	3.00– 8.00	....	5.00–12.00
Lee House	250	....	3.00	....	5.00
Martinique	175	....	3.00– 5.00	....	5.00– 7.00
Mayflower		....	4.00– 9.00	....	6.00–12.00
Metropolitan	400	1.50– 2.00	2.50– 3.00	2.50– 3.00	4.00– 5.00
New Colonial	200	....	3.00– 3.50	....	4.00– 5.00
Parkside	100	....	3.00	....	4.00
Plaza	80	2.00– 3.00	2.50– 3.50	3.00– 4.00	3.50– 6.00
Powhatan	300	....	3.00– 3.50	....	4.00– 8.00
Raleigh	1,000	2.50	3.00– 5.00	3.50	4.50– 9.00
Roosevelt	250	....	2.50– 3.50	....	4.00– 6.00
Shoreham		....	4.00	....	6.00
Wardman	500	....	4.00	....	6.00
Washington		....	4.00– 5.00	....	6.00– 8.00
Willard		....	3.50– 4.00	....	6.00– 7.00
Winston	200	2.00	3.00	4.00	5.00
Young Men's Christian Assn.		1.00– 1.50		2.00	
Young Women's Christian Assn.	55	1.00		3.00	

NOTE: See page 741 for Hotel Reservation Blank.

COMMITTEE ON TRAINING AND PERSONNEL

The Committee on Training and Personnel, with the approval of the Executive Board, has adopted the following general plan for the registration of Health Officers. It is arranged:

1. That during the year 1932 the American Public Health Association register all full-time executive officers of health departments who seek registration according to the plan organized by the Committee on Training and Personnel.

2. That the names and data concerning these individuals be published in alphabetical order in a directory.

3. That there be included for registration persons who served as full-time executive officers for not less than 2 years and who have not been out of the public health field for more than 2 years and who seek registration according to the plan approved by the Committee on Training and Personnel.

4. That some plan be devised whereby individuals may be registered in the future

through an examination given under suitable auspices whereby they can demonstrate a satisfactory knowledge in specified subjects.

5. That the Committee on Training and Personnel and the executive office undertake an educational program to secure support from public organizations for the program of the Committee on Training and Personnel looking to the improvement of tenure and training for public health workers.

6. That the sub-committee uphold and approve the general principle of legal licensing of executive officers in public health.

Registration is not restricted to members of the Association. However, as in other professional directories (like the A.M.A.) names of members in the Association will be printed in large type.

Registration was begun several days ago when blanks were sent to 772 full-time state, county, and city health officers. We are, however, finding it difficult to reach those who have served as full-time executive officers for not less than 2 years and who have not been out of the public health field for more than 2 years or are, at the present time, engaged in some other phase of public health work. If you belong to either of these groups and wish to register will you kindly secure a registration blank from the Committee on Training and Personnel, American Public Health Association, 450 Seventh Avenue, New York, N. Y.

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A.P.H.A. by the Sub-committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Council will follow.

Health Officers Section

H. M. Batson, M.D., Cadiz, Ky., Director, Trigg County Health Dept.

William D. Cagle, M.D., Lebanon, Tenn., Director, Wilson County Health Unit

W. R. Culbertson, M.D., Norton, Va., Wise County Health Officer

John B. Derrickson, M.D., Georgetown, Del., Unit Health Director

Charles H. Eller, M.D., Box 2, Los Lunas, N. M., Valencia County Health Officer

Joseph J. Gerkins, M.D., Pikeville, Ky., Director, Pike County Health Unit

Thomas N. Horan, M.D., Bloomfield Hills, Mich., Health Officer

Arden J. Butler, M.D., Covington, Tenn., Tipton County Health Director

I. N. King, M.D., Prince Frederick, Md., Calvert County Health Officer

Reuben H. Leavitt, M.D., Carson, N. D., County Health Officer

Dr. James M. Parrott, Raleigh, N. C., State Health Officer

Guy Post, M.D., White Cloud, Mich., Director, Newaygo District Health Unit

W. H. Y. Smith, M.D., Perry, Fla., Director, Taylor County Health Unit

George H. Spielman, Mandan, N. D., City Health Commissioner

J. Symington, M.D., Carthage, N. C., Moore County Health Officer

H. M. Wallace, M.D., Staunton, Va., Augusta County Health Dept.

Laboratory Section

Victor W. Bergstrom, M.D., 21 Park Ave., Binghamton, N. Y., Director, Kilmer Pathological Laboratory

Public Health Engineering Section

Elmore E. Butterfield, M.D., 70-04 Dartmouth St., Forest Hills, N. Y., Consulting Chemist

Harry E. Jordan, 113 Monument Circle, Indianapolis, Ind., Filtration Engineer, Indianapolis Water Company

Dick C. Thompson, Nashville, Tenn., Davidson County Sanitary Engineer

J. Summie Whitener, P. O. Box 5171, Raleigh, N. C., Assoc. Professor of Sanitary Engineering, North Carolina State College

Food and Nutrition Section

Julius H. Comroe, 353 S. George St., York, Pa. (Assoc.)

Child Hygiene Section

William H. Griffin, D.M.D., 1108 City Hall Annex, Boston, Mass., Dental Director, Dept. of Health

Mabel E. Rugen, Ph.D., Barbour Gymnasium, Ann Arbor, Mich., Instructor of College Classes

James J. Siragusa, M.D., 261 Hanover St., Boston, Mass., Medical Inspector, Dept. of Health

Luigi P. Verde, 699 Adams St., Dorchester, Mass., Medical Inspector, Boston Dept. of Health

Public Health Education Section

Rexwald Brown, M.D., 1421 State St., Santa Barbara, Calif., Director, Santa Barbara Clinic

Alexander M. Carr, Washington Square Building, Royal Oak, Mich., Pediatrician

Marcos Fernan-Nunez, M.D., 1848 N. 4th St., Milwaukee, Wis., Director, Dept. of Pathology and Bacteriology, Marquette University Medical School

Earl E. Kleinschmidt, M.D., 119 N. Thayer St., Ann Arbor, Mich., Instructor in Public Health and Hygiene, University of Michigan

Elizabeth P. Robinson, University Health Service, Ann Arbor, Mich., Supervising Nurse and Instructor of Hygiene and Public Health

Dr. Georg Seiring, Deutsches Hygiene Museum, Dresden, Germany (Assoc.)

Robert E. Wodehouse, M.D., 304 Plaza Bldg., Ottawa, Ont., Canada, Executive Secretary, Canadian Tuberculosis Association

Public Health Nursing Section

Maud A. Conkling, R.N., Yorktown Heights, N. Y., School Nurse

Bertha Knipfer, 614 Robert E. Lee Apt., Nashville, Tenn., Davidson County Field Nurse

Bessie H. Morse, Covington, Tenn., Tipton County Nurse

Gladys M. Piper, R.N., 416 Carolina Ave., Bristol, Tenn., Chief Nurse, Sullivan County Health Dept.

Margaret B. S. Schinz, R.N., 1144 Henry Clay St., Milwaukee, Wis., Village Nurse, Whitefish Bay

Sarah Smith, R.N., Manderson, S. D., Nurse, Indian Service

Beulah White, R.N., Ashdown, Ark., Public Health Nurse

Louise Zorn, R.N., Court House, Kelso, Wash., Cowlitz County Nurse

Epidemiology Section

Harlin L. Wynns, M.D., 358 State Building, San Francisco, Calif., Junior Epidemiologist, State Dept. of Health

Unaffiliated

William D. Rankin, M.D., 51 E. 50 St., New York, N. Y. (Assoc.)

.....(*Cut off on this line and mail to the hotel of your choice*).....

HOTEL RESERVATION BLANK FOR WASHINGTON MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

450 SEVENTH AVENUE, NEW YORK, N. Y.

OCTOBER 24–27, 1932

To .....
(Name of Hotel)

Please reserve for me.....rooms for.....persons for the A. P. H. A. Meeting. (Cross [X] is placed after my preference.)

Single room.....Double room.....

Maximum rate per day for room $.....Minimum rate per day for room $.....

I expect to arrive..... If date of arrival is changed I will notify you at least 24 hours in advance.

Please acknowledge this reservation.

Name .....

Street address.....

City..... State.....

PUBLIC HEALTH ADMINISTRATION

Racine, Wis.—The new quarters of the health department provide adequate space and proper facilities for carrying on a well rounded health program. Community Health Day, with a special demonstration, marked the opening of these new quarters.

A general health education program has been developed. A monthly bulletin, special health lectures, newspaper and magazine articles, and special folders on smallpox vaccination and diphtheria immunization were utilized. A unique feature was the development of dramatic health episodes broadcast three times weekly over station WRJN.

The crude death rate was 9.04. Stillbirths and infant mortality rates were respectively 32.2 and 36.2. Heart disease heads the list of all causes of death with a rate of 198, but 73 per cent of all deaths occurred after the age of 60. There was a decrease in deaths due to cancer, the rate being 117.

There was 1 case of smallpox during the year, and 1,682 individuals, mainly children, were vaccinated. Diphtheria cases numbered 19, 3 of which were fatal. Children who were immunized numbered 1,866. Scarlet fever presented a real problem with 211 cases and 9 deaths. There were 658 cases of measles and German measles, with no fatalities. Chicken pox and mumps numbered 479 and 536 cases respectively, with no deaths.

During the year, 241 cases of communicable disease were hospitalized at the Lincoln Hospital. Of these, scarlet fever numbered 132. There was a total of 5,968 patient days.

Medical calls on contagious disease cases totaled 1,907, and physical examinations of preschool and school children numbered 4,500. Six hundred and fifty-six children were cared for at the dental clinic. A total of 1,663 visits were recorded at the venereal disease clinic, 105 patients receiving treatment.

The nursing division made a total of 9,280 home visits in the control of communicable disease, and tuberculosis visits totaled 2,077. Thirty-one hundred and ninety-six preschool children were served during the year, and 89,320 services rendered by nurses in the schools.

The laboratory examined 8,229 specimens, of which 1,697 were for diphtheria and 924 for tuberculosis. Besides routine examinations, work was begun on the culturing of scarlet fever cases in relation to release.—*An. Rep.*, Health Dept., Racine, Wis., 1931.

Ottawa, Canada—This city with a population of 130,672 in 1931 reports a birth rate of 23.4 and a death rate of 11.2. There were 11 deaths due to diphtheria as compared with 26 in 1930. An educational campaign for diphtheria prevention by toxoid immunization was carried on during the year. Posters were used in store windows and street cars, advertisements were used in newspapers, and literature was distributed to parents by nurses and through schools, and by lectures by the medical officer of health and the school physician.

Three toxoid clinics were conducted by the health department, and a fourth by a physician and the Victorian Order of Nurses. These clinics secured the immunization of 1,500 children during the year and stimulated an increase in the numbers applying to their family physicians for protective treatment.—*An. Rep.*, Medical Officer of Health, Ottawa, 1931.

Honolulu, **Hawaii**—In this city of 137,582 population, Palama Health and Welfare Center rendered important services in 1931. There were 44,616 visits to clinics, including 203 visits to the Mother's Health Clinic opened in July. There were 1,425 X-ray examinations for the Board of Health, and 623 others for junior high school pupils and other clinic cases. An excellent coöperative program has been developed with the support of the Medical Society. There were 37,605 home visits made by 17 public health nurses in behalf of tuberculosis, prenatal, child hygiene, and other cases. Child health conferences (15 weekly and 2 bi-weekly) are conducted jointly by the Palama nurses and doctors, and the Board of Health nurses. An active recreation program is also conducted. A newly organized tuberculosis committee, from August 1 to December 31, reached some 11,000 individuals through health education channels, besides 14,236 persons reached through the Christmas Seal Sale.—Palama Settlement, *Stat. Rep.*, 1931.

Saving **Eyes**—An excellent example of an attractive, well printed, and enlightening annual report is that of the National Society for the Prevention of Blindness. That progress is being made against ophthalmia neonatorum is suggested in the fact that in 1931 only 7.5 per cent of all new admissions to schools for the blind were victims of this disease, while in 1907 the figure was 28 per cent.

Additional emphasis was placed upon eye tragedies resulting from inherited syphilis. During the year, the society gave 103 demonstrations of vision testing in 9 states and 42 cities, before 6,789 school and public health nurses, teachers, doctors, and social workers. In one state, 8,000 preschool children had their vision tested in accordance with the society methods and the results proved the importance of early eye examinations. Attention has been directed to the conservation of eyes of school children and aid has been given to the revision of the code for lighting school buildings. During the year, 22 additional sight-saving classes were organized, bringing the total number in the United States to 398, located in 23 states and 114 cities.—*Seventeenth An. Rep.*, National Society for the Prevention of Blindness, 1931.

Knoxville, Tenn.—The Health Officer calls attention to the fact that in 1924 there occurred in that city 296 cases of typhoid fever, resulting in 33 deaths and this was considered an average year. The economic loss resulting from this disease at that time amounted to 6.35 cents per capita. Early in 1925 an extensive program of sanitation was instituted which has cost the city about 10 cents per capita per year and has resulted in a reduction of 5.08 cents in the per capita cost of typhoid fever, such cost in 1931 amounting to only 1.27 cents. Thus the saving is ten times the yearly budget for all public health activities.

In 1931 the death rate in Knoxville was the lowest on record, 11.2 per 1,000 (excluding non-residents) and 12.6 was the crude rate. A comparison is afforded of the score of the health activities of this community over a period of years. In 1924 when the *Appraisal Form* was first utilized, Knoxville scored 351 points out of 1,000. By 1926, the score had increased to 610 and in 1931 the attainment was 697 points.

The Health Officer is to be commended for the excellency and simplicity of his annual report and the interesting charts which accompany the tables. A complete index makes the report of special value.—*An. Rep.*, Bureau of Health, Knoxville, Tennessee, 1931.

Jerusalem—The Straus (Hadassah) Health Center includes a program of health education, prenatal and infant welfare, nutrition, school hygiene, dental

hygiene, corrective gymnastics, child adjustment, and milk pasteurization supervision. Child guidance in the preschool period is stressed. The center aims to be a place for testing forms and methods of health promotion in the widest sense, as well as for the application of methods which have stood the test. Education is the central motive.

In view of the lack of high grade milk for children, the center has equipped a modern pasteurization plant. For the first time in Palestine, as well as in the Near East, a high grade, inspected, bacteriologically controlled, pasteurized milk has been made available.

Because of the heterogeneity of the population, the center has found it necessary to experiment with methods of education. During the Pessach week in April, 1931, a graphic and pictorial exhibit was opened, presenting in colored posters, charts, and models, the essential facts of the modern knowledge of nutrition. "The vivid examples of right and wrong food and the consequences struck a convincing note in those who could not be easily influenced by language, written or spoken." The Health Center of Jerusalem is owned and maintained by Hadassah, the Women's Zionist Organization of America. It was made possible by a gift by Nathan and Lina Straus.—*First An. Rep.*, Straus Health Center, Jerusalem, 1931.

Loose Milk—"Is Loose Milk a Health Hazard?" Much valuable information regarding this question is contained in the report of the Milk Commission of the Department of Health of New York City. This commission, appointed at the request of the Commissioner of Health, was made up of eminent scientists and welfare workers. Loose milk is defined in the report as that portion of the city's Grade B milk which is delivered in bulk. Nearly half of all the milk sold in New York is by this definition loose milk. Under this heading, of course, is included the large amount of milk used by institutions and for manufacture, but a large portion is used by restaurants, soda fountains and the like, to be dipped into glasses and served on the premises; and another class, representing about half of the bulk milk used, goes to retail groceries, delicatessen stores and similar establishments. These last two classes are particularly liable to contamination, and constitute the major part of the loose milk problem.

The commission, after extensive investigation, recommends that the sale of loose or dipped milk not consumed on the premises be prohibited, and that milk for consumption on the premises be dispensed only from bottles filled and sealed at the milk plant. However, in view of economic conditions, the restrictions are to be deferred until January, 1933, if the recommendations are adopted.

The Commission believes that the sale of loose milk represents a potential health hazard because of the greater opportunities for removal of cream or the addition of water, because the dipping method tends to give the first customers a disproportionate amount of the cream, and because the distribution by dipping from cans results in exposure to possible contamination.

All market milk should be protected by the additional safeguard of pasteurization, and thereafter kept in closed containers which are not opened until they reach the place at which the milk is to be consumed. . . . Even though the records of the health department disclose no cases of disease which have been traced definitely to the sale of loose milk, the commission believes, in view of the inferior quality, as shown by laboratory tests, and the greater chances of contamination, that loose milk is a potential health hazard.

LABORATORY

THE EFFECT OF VARIATIONS IN TEMPERATURE IN 37° C. INCUBATORS ON BACTERIAL COUNTS FROM MILK

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DURING 1930–1931, the authors of this report, with the help of others,* and with the coöperation of all of the important manufacturers of bacteriological incubators, made tests of commonly used bacteriological incubators. In the majority of cases, the incubators tested have been recent models loaned to us for test. While the results have been most disconcerting, they seem to open the way for a better standardization of bacteriological incubators for use in milk work that may do much toward solving some troublesome discrepancies. All milk control workers are familiar with cases where one laboratory almost continually reports agar plate counts higher or lower than some other laboratory that analyzes the same milk supply. Incubators apparently play an important part in causing discrepancies of this sort.

In the present studies, the bacteriological method of testing incubators first utilized by Supplee, Whiting and Downs † has been used and developed. They tested their incubator by pouring enough plates from the same sample of milk to fill the incubator. They then made counts from the plates, keeping a record of the position in the incubator of each plate and of such temperatures as could be readily observed with the instruments at hand. After the publication of their bulletin, C. P. Olander of the Summe Dairy Company of Kansas City stirred our interest in the matter by sending us the record of a similar test of the bacteriological incubator that he was using. Both of these tests showed surprising discrepancies in counts due to the position of the plates in the incubator. The plates were heated too slowly in one incubator while they were overheated in the other.

The names of the incubators that were tested have not been given in the summary (Table I), partly because it was inconvenient, but chiefly because it was feared that the publication of these names without a more complete discussion than can be given here might leave false impressions.‡ If one incubator was listed as a No. 7 or as a No. 33 of some special type and our record showed that these incubators gave unsatisfactory results, a natural assumption would be that all incubators of the same make and number would give equally unsatisfactory results. It is not felt that such a conclusion would be justified for this assumes that the manufacturer has kept and will keep his models unchanged without improvements. From the interest shown by

* Dr. M. O. Robinson of the Scott-Powell Dairies, Philadelphia, and Richard Eglinton of the Geneva City Department of Health, should receive especial mention for their valuable assistance.

† Cornell Univ. Agri. Exper. Sta., *Memoir 43*, 1921.

‡ For a more complete report, See the *Milk Plant Monthly*, 21:43 (Mar.), 1932; and the *Proc. 24th Ann. Convention, International Assn. Milk Dealers*, Laboratory Section, Oct., 1931.

manufacturers, some of whom have spent and will continue to spend much money in developing high class constant temperature apparatus, it is evident that the latter conclusion would be fallacious. Slight changes in the size or construction of incubators may make very noticeable differences in the results obtained.

Incubators of many commonly accepted types have been used in these tests, *i.e.*, water jacketed types made by the Wilmot Castle Co. and A. H. Thomas Co.; anhydric incubators made by the Freas Thermo-Electric Co., Chicago Surgical and Electric Company, Hearson Co., Electric Heat Control Apparatus Co.; and one home-made incubator. It was impossible to complete the tests of the DeKhotinsky and Lidberg models in time to incorporate the results in this preliminary report.

Only a few general statements can be made about results. In the first place, the incubators were tested under the most unfavorable conditions possible in that they were normally packed full of agar plates. By so doing, their weaknesses were brought out in bold relief. Similar conditions are frequently found in those milk control laboratories that do not observe the standard specification that at least 1 inch of space be left between all piles of plates.

Wide discrepancies in counts and temperatures were produced under the conditions used in our tests. In one case (No. 2, Table I) about 800 plates were poured from one sample of milk and packed in an incubator. The highest average temperature was 46° C., the lowest 37° C. The average count obtained from plates placed in a carefully controlled 37° C. incubator was 38 per c.c. The highest count obtained from any plate of the 800 placed in the incubator under test was 62, the lowest 0. The sterile plates occurred at the hottest temperatures, the highest counts where the temperature was the lowest.

The way in which averages were computed is illustrated by Figure I in which a diagram is given of the lower right hand section of Incubator No. 2. The

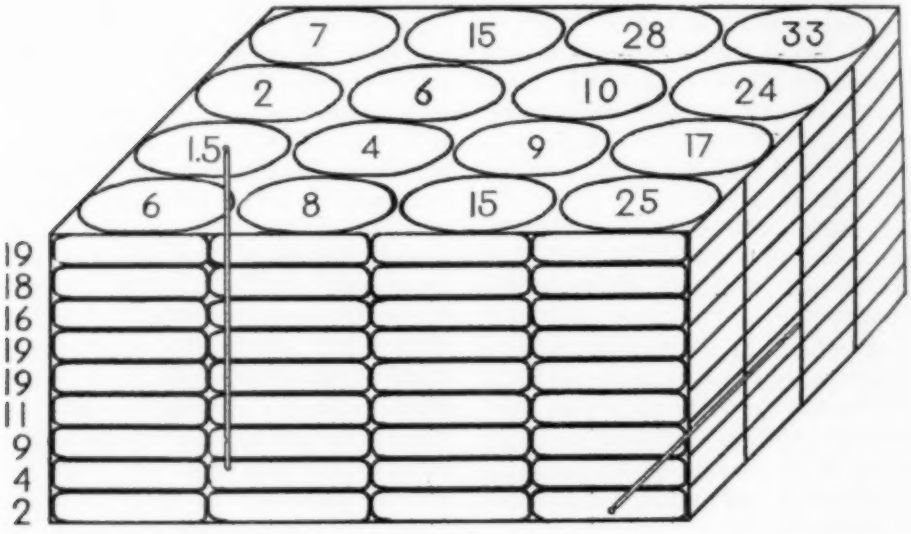

FIGURE I—Diagram of right lower section of Incubator No. 2 showing the arrangement of plates, the way in which averages were computed and the way in which temperature observations were made.

TABLE I

SUMMARY SHOWING RANGE OF PLATE COUNTS AND TEMPERATURES FROM VARIOUS INCUBATORS

Incubator Number	Type of heating	How filled with Petri plates	Maximum temperature Degrees C.*	Minimum count from any individual plate	Minimum average count †	Standard 37° C. count ‡	Minimum temperature Degrees C.*	Maximum count from any individual plate	Maximum average count
1	Two carbon lamps	3 high, spaced 1" apart	.....	2	23	.....	.....	134	128
2	Two electric plates on bottom	Packed full	46.0	0	0.5	38	37.0	62	38
2	Two electric plates on bottom	3 high, spaced 1" apart	38.5	25	60	88	33.0	144	120
3	Two electric plates on bottom	Packed full	44.0	5	9	200	34.0	336	284
4	Coils under each of 2 shelves	Packed full	39.0	135	144	205	34.5	263	250
5	Elements in front and back on bottom	3 high, spaced 1" apart	42.0	9	17	145	34.0	328	279
6	Elements in front and back on bottom	Packed full	37.5	95	106	148	34.0	260	219
7	Water jacketed	Packed full	37.5	113	160	191	35.5	243	215
8	Heated air forced through	Packed full	37.0	.....	.....	.....	35.7	.....	.....
9	Elements in side and bottom walls	13 high, spaced 1" apart	37.5	.....	21	.....	35.0	.....	52
9	Elements in side and bottom walls	Packed full	45.0	9	17	228	36.5	317	231
10	Water jacketed	Packed full	37.5	79	90	97	34.7	136	113

* Temperatures are approximated from the average plate counts and thermometer readings.
† Average count of all plates in a pile or tier as the case may be.
‡ Obtained by incubating a few plates in a separate incubator with carefully controlled temperatures.

minimum average count of any pile or tier in this section was the average secured for the second pile on the left hand side (1.5 colonies per plate) while the maximum average count of any pile or tier in this section was 33 colonies per plate obtained from averaging the results from all the plates in the back pile on the right hand side. Two thermometers were used in this section during the experiment. Their position is indicated in the diagram.

The temperature for each pile or tier was estimated by plotting a curve based on the number of colonies that appeared on duplicate plates incubated for 48 hours in carefully controlled incubators operated at a series of temperatures, such as 18°, 25°, 27.5°, 30°, 32.5°, 37° and 45° C. From the averages of the colony counts obtained in these incubators a curve was constructed on a percentage basis, the highest average count (usually found near 32° C.) being considered 100 per cent. From such a curve it was possible to estimate the temperature of any particular pile or tier in the 37° C. incubator by averaging the number of colonies that appeared on the plates in these piles and tiers. For example, where the average of a pile of plates was only 60 per cent

of the maximum average count secured from a series of incubators, the curve secured indicated that the actual temperature of the pile in the 37° C. incubator was 39.5° C. The temperatures observed from the thermometers placed in the 37° C. incubator agreed well with these estimated temperatures.

The samples used were ordinarily of pasteurized milk known to give the highest count at a temperature of 30–32° C. and these samples were known to be free of any significant number of thermophiles. A few raw milk samples were used.

In general, the water jacketed incubators never heated above 37° C. as their heating surface consisted of water at 37° C.; but they were slow in heating the plates and the plates rarely actually reached a temperature of 37° C. even at the end of 48 hours. Such conditions favor obtaining a high count from milk which has a flora that grows best at 30–32° C. Incubators of this type may be affected by very cold room temperatures. However, they yielded the most uniform counts of any of the incubators that were tested.

The anhydric incubators were found to heat quickly as their heating elements may be as hot as dull redness and the heat is carried to the agar plates by air currents. These conditions frequently cause overheating in some section of the incubator, a very unsatisfactory condition in making milk counts as a temperature of even 38° C. lowers the number of colonies that develop, and only a few degrees higher will yield almost sterile plates unless thermophiles are present.

The situation was particularly bad in those types of anhydric incubators that used carbon filament electric lamps as a source of heat, or electric heating plates covering the entire bottom of the incubator. There is no control over the convection currents in these cases, and the plates that are most directly exposed to the heat are badly overheated. An improved situation is found in incubators where the heating elements are placed at the sides of the bottom or in hollow walls, thereby partially or quite completely controlling convection currents. Such incubators may show under- or over-heating unless the thermostatic control is carefully placed in relation to the convection currents.

Another type of anhydric incubator has the heating elements in 4 or more of the 6 walls, thus imitating the water jacketed incubator. However, greater variations in temperature occurred in these incubators than in the water jacketed types.

In the one type of incubator tested which had a forced draft, outside air was sucked in, heated and driven through at such a speed that it dried out the agar plates badly. Apparently it made a satisfactory drying oven and this was the primary purpose for which it was made. Some large size incubators with a slow forced circulation of the inside air have been described to us that appear to give more satisfactory results.

No incubator rooms have been studied as yet, but it is evident that these possess one advantage over all portable incubators in that they can never be packed to capacity, inasmuch as the center is always wide open thus allowing a free circulation of air. If the convection currents are properly controlled and certain shelves only are used, it is believed that they can be made to produce results that compare well with any of those given for protable incubators.

This work is to be continued until some general specifications can be drawn up for the *Standard Methods of Milk Analysis* report. It should be noted that the need for incubators that will produce a reasonably constant temperature of 37° C. with a fairly heavy load is even greater in routine milk control work than in ordinary bacterial work.

EXAMINATION OF MILK FOR STREPTOCOCCI OF MASTITIS *

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THE examination of milk for streptococci of bovine mastitis is becoming more important from a public health standpoint as stricter sanitary milk control is demanded. The bacteriological or cultural method of milk examination is very important in the detection of udder infections and the determination of the relative extent of disease as indicated by the number of streptococci per c.c. of milk. Frost and Thomas [1] describe a technic for collecting and culturing milk samples which has been employed in this laboratory. Considerable care is necessary in carrying out the technic and the required help in culturing the samples is usually not available. Rosell [2] describes a technic which has disadvantages similar to that of Frost and Thomas and in addition extreme precautions in the collection of the sample are advised. There is a need for a rapid and accurate method of collecting and culturing milk samples with a minimum number of workers required. Such a method is herein described.

SAMPLING

Satisfactory samples are obtained if they are taken in the normal environment of the cows. The udder and teats are wiped with a cloth moistened with an antiseptic solution. Two streams of milk from each quarter are collected in a strip cup and examined for physical evidences of mastitis. Then approximately 10 c.c. of the milk is collected directly into an ordinary sterile bacteriological test tube. The rapidity of the culturing technic makes it possible to take individual samples from each quarter and thus immediately to detect the quarters that are infected. Proper care is exercised in transporting the samples to the laboratory where they are cultured as soon as convenient after collection.

CULTURING

Each sample is inverted several times to insure thorough mixing of the milk and cream, after which 0.1 c.c. is placed in a sterile Petri dish, thus giving a dilution of 1 to 10. If desired, the cream layer can be used in culturing since many streptococci are carried up by the fat globules as they rise to form the cream layer. To each Petri dish is added, aseptically, 8 to 10 c.c. of gentian-violet liver infusion blood agar and rotated thoroughly to mix the agar and the milk. The plates are then incubated at 37° C. for 36 hours. Gentian-violet liver infusion blood agar was studied comparatively with gentian-violet veal infusion blood agar and also dextrose blood agar. The milk was diluted 1 to 20 and 1 to 100 for plating when the dextrose agar was used. The results are given in Table I. Photographs of cultures on each of these mediums are shown in Figures 1, 2, 3 and 4.

Preliminary experiments showed that 10 c.c. samples were as accurate as larger ones, so the collection of this size sample was adopted as standard procedure. The beef liver infusion agar introduced by Stafseth [3] and further developed by Huddleson [4] was employed without change in composition. The pH of the agar was adjusted to 7.3 and filtration was effected through nonabsorbent cotton. For convenience 250 to 300 c.c.

* *Journal* Article No. 99 (n.s.), Michigan Agri. Exper. Sta.

amounts of agar were placed in 500 c.c. flasks and sterilized. To the melted agar cooled to approximately 50° C., was added sufficient 1 per cent aqueous gentian-violet so the final dilution of the dye was 1 to 150,000. Then aseptically collected bovine blood was added to make a 5 per cent blood agar.

Experiments performed using brilliant green as the inhibitory agent indicated that it could be substituted for the gentian-violet. Approximately 10 c.c. of agar is used per plate; with very little practice this amount can easily be poured. The dye in the agar inhibits the udder saprophytes and contaminants from the air at the time of collection of samples without affecting the growth of the streptococci. Figure 1 shows a sample of milk plated in liver infusion blood agar without any inhibitory agent while Figure 2 shows the same sample with gentian-violet 1 to 150,000 in the medium as the inhibitory agent. It is very often rather difficult to interpret accurately cultural results due to the vast number of organisms found in milk which culturally may resemble streptococci. The gentian-violet inhibits these non-significant organisms and thereby an accurate count of streptococci may be obtained. The comparative value of the different mediums is self-evident from the results in Table I. In each case the liver-infusion agar gave a higher count of streptococci than the other two mediums. Exact counts of streptococci in the dextrose blood agar are impossible

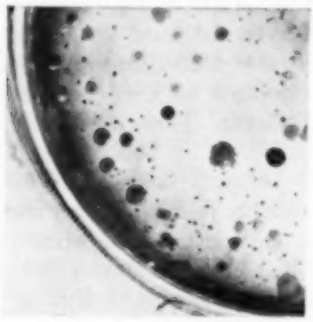

FIGURE 1—Sample of milk plated in liver infusion blood agar without any inhibitory agent

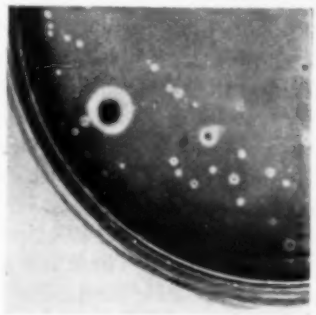

FIGURE 2—Same sample as in Figure 1; gentian-violet 1 to 150,000 was added to the medium as the inhibitory agent

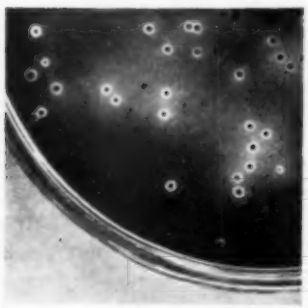

FIGURE 3—Sample of milk from an infected cow cultured in gentian-violet liver infusion blood agar.

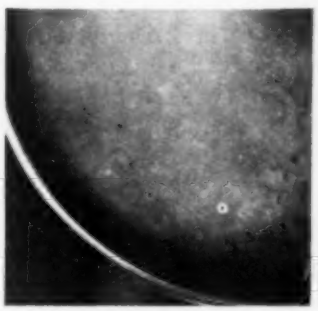

FIGURE 4—Same sample as in Figure 3 cultured in gentian-violet veal infusion blood agar

TABLE I

COMPARATIVE VALUE OF THE VARIOUS MEDIUMS

Sample number	Bacteria per c. c.					
	Gentian-violet–liver-infusion–blood agar		Gentian-violet–veal-infusion–blood agar		Dextrose blood agar	
	Streptococci	Other organisms	Streptococci	Other organisms	Streptococci	Other organisms
1	.....	.....	.....	.....	.....	3,810
2	.....	.....	.....	.....	.....	3,175
3	6,985 (alpha)	.....	4,810 (alpha)	.....	2,260 (alpha)	5,985
4	.....	60	.....	.....	.....	5,080
5	.....	.....	.....	20	.....	1,905
6	560 (beta)	.....	310 (beta)	.....	420 (beta)	3,275
7	.....	.....	.....	.....	.....	2,540
8	3,175 (alpha)	.....	2,080 (alpha)	.....	1,760 (alpha)	2,050
9	2,540 (alpha)	.....	1,840 (alpha)	.....	1,210 (alpha)	1,965
10	3,810 (alpha)	.....	2,475 (alpha)	.....	2,480 (alpha)	1,965
11	300 (alpha)	.....	120 (alpha)	.....	180 (alpha)	1,090

since their differentiation from other organisms is based only on colony size and appearance.

Figure 3 shows a sample of milk from an infected cow cultured in gentian-violet liver infusion blood agar and Figure 4 shows the same samples cultured in gentian-violet veal infusion blood agar. There is a slightly higher incidence of streptococci and the colonies grow to a much larger size and thus demonstrate their characteristics more plainly on the liver infusion agar.

If culture isolations are desired they should be made immediately at the end of the 36-hour incubation period since later there is a danger that organisms may be killed by the acid formed upon the fermentation of the sugar and glycogen found in the liver. Pour plates are recommended but good results are obtained by placing 0.1 c.c. of the milk sample on the surface of the hardened agar and spreading the milk by the use of a bent glass rod.

CONCLUSIONS

1. Elaborate precautions in collection of milk samples for streptococcus examination are not essential; simply wiping the udder and teats with an antiseptic moistened cloth is sufficient.

2. Ten c.c. samples from each quarter or cow are representative.

3. Greater ease and accuracy in interpretation of cultural results are possible at the same time quantitative results are obtained.

4. Gentian-violet liver infusion blood agar is a superior medium to use in culturing milk for streptococci. Brilliant green may be substituted for the gentian violet.

REFERENCES

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2. Rosell, J. M. *Cornell Vet.*, 21:317, 1931.
3. Stafseth. Mich. Agri. Exper. Sta. *Tech. Bull.*, 49, pt. 2, 1920.
4. Huddleson, Hasley and Torrey. *J. Infect. Dis.*, 40, 2:352, 1927.

VITAL STATISTICS

Occupational Fatality Rate Lowest in Twenty Years—Greatly reduced industrial activity throughout the whole of 1931 resulted in the lowest death rate from accidental injuries arising out of or in the course of employment ever recorded for adult white male policy holders insured in the industrial department of the Metropolitan Life Insurance Company. The facts for a 20-year period, for which such records are available show this clearly.

Occupational fatalities during 1931 occurred at the rate of 27.3 deaths per 100,000 adult white male policy holders; a decline of 12 per cent from the rate of 31.0 per 100,000 for 1930. Each of the principal means of accidental injury showed a marked decline, as compared with 1930, with the exception of occupational automobile accidents, for which the rate increased 21 per cent. The rate in 1931 for all occupational fatalities was 0.2 deaths per 100,000 lower than that in 1915, and 2 deaths per 100,000 lower than in 1921, the years with the next lowest rates. These years, like 1931, were characterized by low business activity and widespread unemployment. In general, the insurance analysis shows that the curve for the occupational fatalities follows the curve of business conditions. The low rates for the years cited are in striking contrast to the high rates for 1913, 45.7 per 100,000; 1918, 40.9; and for 1923, 40.1 per 100,000. The high rate in 1913 exceeded the low rate in 1931 by 67 per cent.

Data for adult colored male policy holders are available only since 1921. Death rates for these policy holders were found to be from 2 to 15 per cent higher than those for white males in the corresponding years, with the exception of 1931, when the rate for the colored dropped to 26.9 per 100,000 as compared with 27.3 for the white policy holders.

Traumatism by falls was the most frequently reported means of fatal occupational injury in 1931 among our adult white male policy holders. Deaths occurred through this means at a rate of 4.8 per 100,000. Closely following falls were automobile accidents with a rate of 4.6 per 100,000. Other important means of injury, in the order of their death rates were—traumatism by machines (3.1), traumatism in mines and quarries (3.0), steam railroad accidents (1.9), electricity (1.5), accidental drowning (1.3), and accidental burns (1.0).

Traumatism by falls was the leading means of occupational injury in each year since 1927, and also in the years 1925, 1924, and 1921. Steam railroad accidents were the principal means for the entire period 1912 to 1920, and again led the list in 1922, 1923, and in 1926. This change in the position of railroad accidents and traumatism by falls in recent years, was not brought about by an increase in the death rates for falls, which, on the whole, have fluctuated within fairly narrow limits in the 20-year period, but by the decline in the rate for railroad accidents. From the high point of 12.5 deaths per 100,000 in 1913, the rate for this type of accident has declined to 1.9 deaths per 100,000 in 1931. Much of this decline is undoubtedly real, and reflects a reduction in the accident hazard of railroad employees due to the safety measures introduced by the roads. But the extremely low rates recorded in 1930 and in 1931 must be ascribed in large meas-

ure to the very unfavorable economic situation of the railroads in these years, involving reduced traffic and fewer employees.

Industrial automobile accidents have come up from a place near the bottom of the list in 1912, to second place in the years 1930 and 1931. In the latter year, the rate (4.6) was but 0.2 deaths per 100,000 behind the rate for falls. If the present tendency continues, automobile accidents will soon be the leading means of fatal occupational injury.—Met. Life Ins. Co. *Stat. Bull.*, 13: 1–2 (Mar.), 1932.

Preliminary Report of Vital Statistics for New Jersey, 1931—The preliminary report of vital statistics for New Jersey shows that the low general death rate and infant mortality rate of 1930 were maintained in 1931. The general death rate of 10.63 in 1931 was identical with the rate for 1930, which rate was the lowest recorded in the state since the establishment of the State Department of Health 54 years ago. The previous low rate had been 11.43 for 1927. The infant mortality rate was 56.9 per 1,000 live births, which was only slightly higher than the lowest rate ever attained in the state. The lowest rate, 56.7, occurred in 1930.

Approximately 64,050 births were reported in New Jersey in 1931, showing a birth rate of 15.43 per 1,000 inhabitants. The total births show a decline of approximately 4,150 births from the number reported in 1930. This decrease of more than 6 per cent is the greatest decrease in births which the state has suffered at any time since 1878, when the reporting of births became obligatory.

New low levels in death rates from typhoid fever, diphtheria, and tuberculosis were reached in 1931, when the rates were 0.9 for typhoid fever, 2.9 for diphtheria, and 65.1 for tuberculosis (all forms). The maximum typhoid fever death rate in New Jersey was experienced in 1882 when the rate was 74.3. Since 1912, the annual death rate for this disease has not exceeded 10 deaths per 100,000 population.

The death rate from diphtheria for 1888 was 148. During the decade beginning with 1900 the rate declined from 48 to 25. The following 10-year period showed a decline to 18.

The rate of 65.1 for all forms of tuberculosis in 1931, compared favorably with the rate of 90.1 for this disease 7 years ago. The death rate from cancer and other malignant tumors was 113.5 in 1931. This cause of death has increased gradually in importance, since 1879 when the death rate was 37 per 100,000.—*Pub. Health News-Monthly Bull.*, Dept. of Health, New Jersey. 17: 45–6 (Feb.-Mar.), 1932.

Vital Statistics in Porto Rico, 1930—The enumeration of the census of Porto Rico in 1930 made possible the thorough revision and correction of the vital statistics of the island, for the last 20 calendar years, beginning with 1911. As compared with the fiscal year, the calendar year is a much more logical and generally accepted basis for estimating vital statistics figures; this basis makes the figures for Porto Rico more comparable to those of the world at large.

The death rate for Porto Rico in 1930 was 18.6 per 1,000 population as compared with 25.3 for 1929 and 23.6 for 1928, when the rate was increased as a result of the San Felipe hurricane which occurred during the latter part of 1928. With the exception of the years 1917 and 1918, when the general death rate was 30.9, because of the severe epidemic of influenza and measles, the years 1928 and 1929 showed the highest death rates in the last 20 years.

There were 54,574 births registered in 1930 as compared with 52,468 the previous year; the birth rates for 1929 and 1930 were 34.4 and 32.2 respec-

tively. Marriages in 1930 numbered 9,961, the marriage rate being 12.8 per 1,000 population, as compared with 10.9 in 1929. Infant mortality which had flared up along with the general death rate in 1928 and 1929 to 167 and 161 for those years, respectively, declined in 1930, to a rate of 126 per 1,000 live births.

While the health conditions in Porto Rico are by no means satisfactory, it is indeed gratifying to note a reduction, and in some cases a great reduction in the deaths from several causes. Seven causes of death showed reductions of more than 30 per cent, the greatest reduction being noticed in the death rates from dysentery (80 per cent); hookworm disease (53 per cent); influenza (68 per cent); and diarrhea and enteritis, which declined 35 per cent among children under 2 years of age, and 47 per cent among those 2 years and over. The 1930 death rate from diarrhea and enteritis among children under 2, was 195 as compared with 284.6 in 1929; for children of 2 years and over, 132.2 in 1930 as compared with 249.9 in 1929. The death rate for malaria declined from 137.9 in 1929 to 121.08 in 1930; congenital debility from 107 to 84.2; bronchitis from 80.9 to 57.6; dysentery from 33.5 to 6.6; nephritis from 205.6 to 133.8; bronchopneumonia from 125.9 to 97.9; typhoid fever from 14.5 to 8.5; hookworm disease from 50.4 to 23.7; influenza from 10.4 to 3.3; and tuberculosis (all forms) from 301.4 to 263.2.

As can be observed by the high mortality rate from tuberculosis this disease is a very important public health problem in Porto Rico, and as such it is engaging the interest and attention of the health authorities of the island. Among the important activities in the control of tuberculosis are the better provision for hospitalization of the advanced cases; the care of 30 children at the Preventorium at Guaynabo; the provision of milk for the children attending the rest rooms for undernourished children in San Juan and in the camp for undernourished children at Aibonito; and the maintenance of milk stations in practically every town on the island.

Heart disease, cancer, and external causes were the only important causes of death which showed increases in 1930, over the previous year. This is typical of the experience in most other countries. —*Report of the Commissioner of Health of Porto Rico.* Fiscal Year Ending June 30, 1931, pp. 13–22.

Report of the Registrar-General of the Irish Free State for the Year 1930—The estimated population of the Irish Free State in the middle of the year 1930 was 2,946,000, the same as for 1929, but 26,000 less than the population disclosed by the Census of 1926. Marriages and births registered during the year show increases, and deaths and emigration show decreases as compared with 1929, the decrease in net emigration being 5,238. The number of marriages was 13,631, and the marriage rate was 4.63, as compared with a rate of 4.61 in 1929, and the annual average, in the last 10-year period 1920–1929, of 4.86. The marriage rate of the Irish Free State is low as compared with the other countries of Great Britain. In Northern Ireland, the rate for 1930 was 6.07 per 1,000; in England and Wales 7.9; and in Scotland 6.89.

The birth rate for the Irish Free State in 1930 was 19.81 and in the preceding year 19.78. Although the 1930 rate is slightly higher than the rate for 1929, the increase is so small as to compensate very little for the gradual but steady decline in birth rate that has been noticeable in recent years. Between the periods 1911–1915 and 1925–1929 there has been a fall of 9.7 per cent in the birth rate.

The number of deaths registered during the years was 41,702, or 14.16 per

1,000 inhabitants. This is the smallest number of deaths ever recorded for a single year in the country, but on account of the decline in population the rate is not the lowest on record. Lower rates have been reported twice within the last decade—14.01 in 1923, and 14.06 in 1926. The death rate for tuberculosis continues to decline, although the rate for the Irish Free State is still high as compared with other countries; it was 129.8 in 1930 as compared with 131.5 in 1929. The tuberculosis deaths in 1930 constituted 9.2 per cent of the total deaths for the year.

There were 213 more deaths from cancer in 1930 than in 1929, increasing the death rate from 105.8 in 1929 to 113.0 in 1930. The cancer record for 1929 had been encouraging because the rate that year had shown a decrease from 108.2 in 1928.

Deaths from diseases and accidents of pregnancy and childbirth numbered 278 or 4.77 per 1,000 births registered as against an average of 295, and a rate of 4.82 per 1,000 births in the 10 years 1920–1929. The infant mortality rate for 1930 was 68, as compared with 70 for the preceding year and 71 as the annual average for the preceding 10-year period.—*Annual Report of the Registrar-General of the Irish Free State for the Year 1930.*

Infant Mortality in 1930—The infant mortality rate for the 860 cities in the birth registration area of the United States in 1930 was 62.2 per 1,000 live births or 4.0 points below that of 1929 when the rate for 720 cities was 66.2. The 1930 rate is thus the lowest yet attained for the cities of the country.

Among the largest cities, those over 250,000 population in 1930, the lowest rate reported is for Seattle, Wash., the figure being 37. San Francisco, Calif., stands next with a rate of 40, and Portland, Ore., third with a rate of 41. In the population group 100,000 to 250,000, Long Beach, Calif., is low with a rate of 43. Tacoma, Wash., is next with 44, and Elizabeth, N. J., third with 45. Within the group of cities with populations of 50,000 to 100,000, Oak Park, Ill., with a rate of 28 is first, followed by Glendale, Calif., 30, and Newton, Mass., 31. Of the cities between 25,000 and 50,000 population, Alameda, Calif., with a rate of 21 stands first. Everett, Wash., with 27 is second, and Hutchinson, Kan., with 30 is third. In the group of smallest cities, those with 10,000 to 25,000 population, Shorewood, Wis., has an infant mortality of zero. Maplewood, Mo., has a rate of 6, and Webster Groves, Mo., 9.

It is interesting to note that the list of 15 cities (3 from each population group) having the lowest infant mortality in 1930, includes 8 cities located in the Pacific Coast states; the list of 15 cities (3 in each population group) showing the highest rates, includes 8 cities located in the southern and southwestern states, 4 in Tennessee alone.

When the cities are grouped by population, the largest cities are found to have the lowest average infant mortality rate. These rates are computed from the sum of the births and the sum of the deaths under 1 year. For the group of cities with 250,000 population or more in the birth registration area, the rate in 1930 was 60.0. The smallest cities as a group have the highest rate, 66.6. This fact confirms the experience of previous years.

Infant mortality rates in the birth registration area show a wide variation from zero at one extreme to 259 at the other. About a quarter of the cities have rates below 50. Not quite half have rates between 50 and 70. Nearly a third have rates above 70. Of the 10 largest cities in the country in 1930, Chicago and St. Louis had the lowest infant mortality rate, 54 for each city. Cleveland stands next with a rate of 55,

and New York fourth with 57. Next comes Philadelphia with a rate of 59, followed by Los Angeles (61), Detroit and Baltimore (65), and Pittsburgh and Boston (69). Of these 10 cities, Boston alone showed no reduction in infant mortality from 1929 to 1930, the rate for both years standing at 69. The 9 other cities in the group showed reductions varying between 3 and 11 per cent. The reduction of 11 per cent was for Baltimore, which had an infant death rate of 73 in 1929.—*Stat. Rep. Infant Mortality*, A. C. H. A., 1930.

PUBLIC HEALTH ENGINEERING

The Sewage Works of Essen-Rellinghausen and the Operation of the Latest Extensions—The plant deals with a dry weather flow of 30,000 cu.m. per 24 hours. The strength of the sewage is similar to that of an average domestic sewage. The trade waste waters included are mainly from coal mines, iron works, dye works, and laundries. Preliminary treatment is accomplished by screens, sand and oil traps, Emscher tanks, and a flat clarification tank with separate sludge digestion tanks, and further treatment in an activated sludge plant. The units of the plant are described and illustrated.

The material deposited in the sand trap is treated with compressed air to separate sludge. The oil trap consists of an aeration chamber, from which the sewage overflows into stilling chambers where the floating oil is retained by walls under which the sewage flows back to the aeration section. The collected fats are either burned with the screenings or digested with sludge. The Emscher tanks are 20 years old and, in spite of much overloading, have given no trouble. The water content of the sludge varies according to the amount of excess activated sludge which is returned to the plant.

The flat clarification tank is fitted with Dorr sludge scrapers and a scum remover and double inlet and outlet weirs to increase the tank capacity when the flow is increased by rain. For experimental purposes, one digestion tank was built flat, with a Dorr sludge remover, and another with a floor inclined downward toward the center. Both are fitted with submerged gas covers, stirring apparatus for breaking the scum, and heating and stirring arrangements.

The tanks are now being used in sequence, artificial heating being used in the first stage only. Scum has formed above the gas cover in the first tank but not below the cover.

The effect of clarification and digestion on the amount of sludge and on its water content and the effect of temperature on the amount of supernatant water are discussed. The sludge gas beyond what is used for heating the digestion tank is added to the city gas supply. The gas amounts to an average of about 16 litres per head per day and would be sufficient to supply the power needs of the plant. Gas from the Emscher tanks contains considerably less carbon dioxide than that from separate digestion. Hydrogen sulphide (due to sulphate from mine drainage) is removed by passing through bog iron ore. Sludge is deposited on drying beds in wet weather but otherwise on fields.

A drum screen in the channel leading

to the aeration tank is brought into action when required to prevent Chironmid larvae reaching the activated sludge plant. There are 4 aeration tanks using a combination of compressed air and submerged paddles. Porous plates suitable for such aeration are discussed. Two 8 m. deep hopper-shaped settling tanks have been found to give less operation trouble and better results than one 6 m. deep with double hopper bottom. Return sludge and dilution water containing oxygen are added in the channel leading to the aeration tank.

The power requirements and effect of the activated sludge treatment, and the plant for burning screenings and oil-trap residue are described.—F. Fries, *Gesund. Ing.* 54:661 and 681, 1931. *Summary of Current Literature,* Water Pollution Research V, 2 (Feb.), 1932.

A Review of Water Treatment by Ammonia - Chlorine Process—The development of ammonia-chlorine treatment for taste control is discussed. It was adopted at Indianapolis in 1930, anhydrous ammonia being applied to the raw water just prior to its chlorination. Owing to certain difficulties in handling the anhydrous ammonia, it was decided to use the cheaper ammonium sulphate instead. This has given entire satisfaction. It is applied mixed with aluminium sulphate. The ratio of ammonia to total chlorine has varied from 1:2 to 1:3, the ammonia dose ranging from 2.3 to 3.1 lb. per mil. gal. The sulphate used normally contains 0.003 per cent of phenol.

The results of this treatment are better disinfection, elimination of phenol tastes and of some of the other tastes resulting from chlorination, elimination of aftergrowths, the maintenance of a higher chlorine residual without noticeable tastes, and probably a reduction in the total chlorine requirement.

Experience has shown that a fairly hard water containing an appreciable quantity of calcium responds readily to the treatment and that corrosion is not accelerated.—H. E. Jordan, *Water Works Eng.*, 84:1388, 1931. From *Summary of Current Literature,* Water Pollution Research, V, 3 (Mar.), 1932.

Modern Sewage Disposal Exemplifies Chemical Engineering Progress—The author deals with the growth of mechanization in sewage treatment and discusses the design and use of screens, grit chambers, Imhoff tanks, and settling tanks with mechanical sludge removal. Aeration and agitation methods used in the activated sludge process are described and the possibilities of value of recovery from sludge as fertilizer or in other ways are discussed. The author then deals with separate sludge digestion, the composition, amount and utilization of sludge gas, the effect of temperature and pH on digestion, thermophilic digestion, and the drying or dewatering and use as fertilizer of digested sludge.

Present research is directed toward the concentration of fresh solids before digestion, rapid digestion at high temperature, mechanical dewatering of digested sludge and its disposal at the lowest possible cost.—F. W. Mohlman, *Chem. Metall. Eng.*, 38:520, 1931. From *Summary of Current Literature,* Water Pollution Research, V, 2 (Feb.), 1932.

Methods and Aims of Agricultural Utilization of Sewage in Central Germany—The industrialization of central Germany in the last 20 years and the resulting increase of population are briefly described. The region is one with a fairly low average rainfall so that there is little natural reserve of water to meet increased demands. The supply must be drawn from ground water as the rivers are in general too polluted for use. Impounding reser-

voirs and central water works are being used wherever economically possible. Damming the rivers, as is being done on the Ruhr, would have little effect on the supplies, which are mainly ground not ground-filtered water, and would not have the same purifying effect as the pollution is largely organic and putrescible matter.

The agricultural utilization of sewage is therefore of importance. By this means the ground water supply is supplemented and damage to land by the withdrawal of ground water is prevented.

Konig has calculated that good results can be obtained by utilizing town sewage at the rate of 2,000–5,000 cu.m. a year per hectare, depending on the condition of the soil. These quantities would, taking into account the increased wastage by evaporation and seepage, make up the average yearly 400–500 mm. rainfall to the optimum for the crops grown of 600–700 mm. These quantities of sewage can be easily assimilated by the soil. The choice of process (artificial rain or irrigation) depends mainly on the contour of the surface, irrigation used on slopes and artificial rain on flat or uneven land.

The suitability of town sewage and various industrial waste waters as fertilizer and methods of irrigation and artificial raining are discussed. The pre-treatment necessary varies from coarse screens to settling plants with 1–2 hours' retention. Where new plants are necessary, settling tanks with 15–20 min. retention, with separate digestion tanks of 20 litres a head capacity are recommended. Settling tanks to retain the sewage about 1 month are necessary when frost renders agricultural utilization impossible.

The control of the distribution of sewage, the operation of the plant, and the financial arrangements are discussed. The processes of purification of the sewage in the ground are described and the absence of hygienic objections to the agricultural utilization of sewage is emphasized.—A. Carl, *Gesund, Ing.*, 54: 765, 1931. From *Summary of Current Literature,* Water Pollution Research, V, 5 (May), 1932.

Water Supply and Sewage Disposal in Cairo, Egypt—Egypt has a total population of 14 million, mainly rural. There are 28 water works filtering surface water, and 22 untreated supplies from wells. The supplies are under the control of the Department of Public Health. The demand averages 30–35 gal. per head per day.

The Cairo supply for a population of 800,000 is drawn from the Nile. The content of suspended matter varies from 150 to 1,500 p.p.m. Alum is added at the intake pipe and the water is pumped to settling tanks. Fifty per cent is treated in primary tanks with Dorr clarifiers and then in secondary tanks, while the remainder passes direct to secondary tanks. The water is then passed through rapid sand filters with air-water wash, and chlorinated.

Algae growths in the river cause trouble and copper sulphate treatment has not been beneficial. Sewage is of a strong domestic type and disposal is generally by sewage farming. The sewage is generally pumped for some distance and is septic, causing corrosion in sewers and odor nuisance. The Cairo sewage is pumped 15–20 miles and treated in Travis tanks.

Sludge is dried on sand beds and sold for fertilizer. The effluent is used on the state farm. About 1 per cent is treated on stone filters. Some chemical results are given.—J. Heukelekian, J. Series Paper, New Jersey Agri. Exper. Station, New Brunswick, reprinted from *Pub. Works,* Mar., 1931. From *Summary of Current Literature,* Water Pollution Research, V, 5 (May), 1932.

INDUSTRIAL HYGIENE

Cyanide Poisoning—The most important industrial forms of cyanide are hydrocyanic acid and the sodium and potassium salts of this substance, NaCN and KCN. Hydrocyanic acid is a volatile liquid, both aqueous and alcoholic solutions decompose spontaneously. The salts are crystalline in nature; in solution they decompose, when heated above 176° F., or when they are acted upon by acids, and in decomposing they give off cyanide vapors. These compounds are used in industry for the extraction of gold and silver, for electroplating, and in certain metal cleaning polishes.

Poisoning occurs by skin absorption, by inhalation of the gas and inhalation and ingestion of the crystalline compounds. The cyanides exert a peculiar asphyxiating action on the cells of the body. So completely and rapidly are the latter deprived of their ability to utilize oxygen that injury or death may ensue very rapidly. Cyanide rash often follows the use of these compounds in industry.

Contrary to the belief held by many physicians, cyanide may produce chronic as well as acute poisoning. In the present contribution brief abstracts are presented of 3 cases of chronic cyanide poisoning taken from the files of the Division of Industrial Hygiene of the New York State Department of Labor.

The immediate effects in the first case were nausea, dizziness and unconsciousness, followed during the next 6 weeks by weakness and palpitation, with incapacitation for work.

The second case is that of a gold plater, with an occupational history of 20 years' duration. He made up a large supply of KCN solution one day; that evening he developed severe abdominal pains and convulsions and later developed persistent vomiting. This man was forced to give up his work; he lost 20 pounds in weight, and was incapacitated by weakness, headache, dizziness, muscular cramps, and recurring attacks of abdominal pain and vomiting.

In the third case the physician who examined the victim 3 years after the onset of symptoms found him entirely disabled with paralysis and wasting of the muscles of the arms and legs.—Adelaide Ross Smith, M.D., *Indust. Bull.*, 11, 6: 169 (Mar.), 1932. L. G.

Procedure for Establishing Optimum Air Conditions for Light and Heavy Work—The present contribution deals with the study of atmospheric conditions lying in that range between the optimum comfort zone on the lower side and the onset of disturbance in the heat regulating apparatus on the upper border. This zone is not characterized by any pathological manifestations, but nevertheless discomfort and fatigue causing a reduction in working output may be present.

The authors point out that according to the data of Hill the optimum temperatures for certain workers are exceedingly low, for example, —21° C. for a stone mason and —31½° C. for a man sawing wood. Obviously such temperatures cannot be proposed as practical optimums. In addition they point out that under certain conditions of air currents, the kata thermometer of Hill does not yield reliable estimates of the cooling power. The effective temperature index determined from sensation is applicable to Americans at rest or engaged in light physical work. No data are presented for heavy physical labor.

Moreover these studies do not account for acclimatization. For these reasons the authors have undertaken the problem of the establishment of optimum conditions for light and heavy work.

It is pointed out that until perspiration sets in, skin temperature runs parallel to the sensation of heat and that a definite subjective sensation of warmth or cold corresponds to a definite skin temperature. For this reason the authors believe that skin temperature represents the objective index, both of the thermal effect and subjective sensation. They quote Marshak to the effect that the normal range of skin temperature of man at rest is between 31.5 and 33.5° C. So long as the skin temperature remains in this range the subject is comfortable, neither hot nor cold.

In the experimental studies they determined the optimum conditions for light and heavy work which do not result in the production of perspiration, and utilize the temperature of the forehead and sternum as indexes. In the range of perspiration use was made of a method of W. L. Minor, for the quantitation of the degree of perspiration present. In this technic the forehead is covered with a light coating of a mixture of iodine, alcohol, and castor oil, and is then powdered with rice starch. They have designated 6 degrees of perspiration:

1. Separate dots
2. Large dots
3. Spots and dots
4. Small patches
5. Large patches with confluence
6. Profuse washing away of starch

The authors have established the fact that in every given phase of perspiration the subject experiences a corresponding sensation of warmth. The light work experiments were conducted on seamstresses, the skin temperatures being recorded by means of a resistance thermometer. It was found that the skin temperature closely followed the room temperature and that the sensations of the subjects closely followed the skin temperatures. At room temperatures lying between 18 and 22° C. the skin temperature was found to be in the comfort range. A table is prepared showing the relationship between dry bulb temperature, humidity, and the air velocity necessary for optimum air conditions.

The heavy physical work experiments consisted in raising and lowering a 16 kg. weight. A table is presented showing the optimum air conditions for the conduct of such heavy physical labor.—G. D. Arnaoutow and E. W. Weller, *J. Indus. Hyg.*, 14, 4 (Apr.), 1932.

L. G.

Malignant Growths Resulting from Exposure of Radioactive Substances—Up to this time there have been some 18 fatalities among workers engaged in the painting of watch and clock dials with radioactive substances. Among these persons 2 deaths were brought about by bone sarcomas prior to 1929—1 in 1924 and 1 in 1927. Since 1929, 3 more deaths from bone sarcoma and 3 additional cases of this disease have been reported.

Dr. Martland points out that there appears to be a decided difference in the clinical and autopsy findings in the early cases as contrasted with the later ones which have occurred since 1929. The first 13 deaths which occurred between the years 1922 and 1928 developed in from 4 to 6 years after cessation of employment. These cases were characterized by the development of anemia and necrosis of the jaw bone.

In the later cases, occurring in a period from 6 to 7 years from the termination of employment, the patients appeared to have escaped extensive necrosis of the jaw bone and the fatal anemia, and instead showed chronic crippling bone lesions, most frequently present in bones subjected to weight, pressure, or trauma. Anemia is also present in these

cases, but in a much milder degree than that present in the earlier group of cases.

In the early cases mesothorium predominated while in the later cases radium has been detected in the postmortem examinations. It would appear, then, contrary to the belief of certain persons, that radium as well as mesothorium is responsible for the production of pathology. The bone lesions in these later cases was found to be osteogenic sarcoma, and Dr. Martland states:

> It would now appear that we have reached a point when we will no longer encounter the anemias and jaw necroses seen in the earlier cases, but instead the girls will appear with terrible, usually rapidly growing, embryonal or anaplastic osteogenic sarcomas, the result of radioactivity.

Previous autopsies disclose the fact that the lethal amount of radioactive substances in the skeletons of deceased persons varied between 10 to 180 micrograms. The rays emitted by such deposits consist of 92 per cent alpha rays and 8 per cent beta and gamma rays. These alpha rays are said to be the most potent and destructive agent known to science. Mesothorium emits 5 particles as compared to 4 emitted by radium. It is interesting to note that the 10 micrograms, that is, 1/100,000 gram, is sufficient to produce death, and yet this quantity is so small as to be invisible and undetectable by any known chemical method of analysis.

An interesting discussion of the incidence of carcinoma of the lung in cobalt and pitchblende miners is presented. A few years ago a study of 154 miners was made using modern diagnostic methods. During a period of 3½ years, 21 of the miners died and in 13 cases (62 per cent) a diagnosis of carcinoma of the lung was made at autopsy. The belief is now held that radioactive emanations are the causative factors in the production of these cases of lung cancer. It is true that the concentration of radium emanations in these mines is quite low, nevertheless the exposure is of long duration, 20 to 30 years prior to the development of the tumors.

The author of this valuable contribution issues a warning against the use of radioactive drinking water.—*Month. Labor Rev.*, U. S. Department of Labor. 34, 4 (Apr.), 1932. Abstr. from The Occurrence of Malignancy in Radioactive Persons—Harrison S. Martland, *Am. J. Cancer*, Oct., 1931. L. G.

Cadmium Poisoning: 1. The History of Cadmium Poisoning and Uses of Cadmium—This contribution presents a very valuable summary of the physiologic and pharmacologic action of cadmium. Reviewing the literature in a very complete manner the author concludes that cadmium is relatively toxic for laboratory animals and that it possesses a direct paralyzing action on the central nervous and vasomotor systems. This material has a tendency to be stored chiefly in the liver and kidneys, and elimination, which is very slow, is effected through the kidneys and gastrointestinal tract.

In the second portion of this paper, cadmium poisoning in man is reviewed, and a discussion of the chemistry and industrial uses of cadmium is presented. Finally a list of the health hazards associated with the use of cadmium closes this interesting report.—Leon Prodan, *J. Indus. Hyg.*, 14, 4 (Apr.), 1932.

L. G.

Japanese Association of Industrial Hygiene—The Fourth Annual Meeting of the Japanese Association of Industrial Hygiene was held in the city of Nagoya November 14–19, 1931.

The subjects covered were the influence of gymnastic exercises on the health of industrial workers, the organization of factory clinics, health insurance and medical practitioners, high temperatures and humidity in spinning mills, the protection of women in pregnancy and after

confinement, traumatic neurosis, and the preparation of standards for the recognition of injury, disease or death due to occupational causes. There were likewise lectures on occupation and eyesight, and standards of nutrition and standard diet.

The meeting was attended by more than 100 persons, including government officials and factory physicians. The next annual meeting will be held in Tokyo.—*Indust. & Labor Inf.*, 41, 4: 75 (Jan. 25), 1932. E. R. H.

Pulmonary Fibrosis: Experiments of Short Duration—Authors' Conclusions:

It seems probable that the fibrosis of the lungs produced in workers exposed to dusty atmospheres, especially those in which fine particles of silica make up the larger percentage of the dust, is an end product and represents a progressive defeat of the protective mechanisms of the body. It is never found until the lung fails to rid itself of dust carried out of the bronchi by ciliary action or of dust carried through the lung by way of the lymphatic channels. With the breakdown in the carrying mechanisms, the burden of protection is the phagocytic cell, which, with its load of engulfed material, passes to all parts of the lung and ultimately becomes immobilized in those portions of parenchyma in which lymphatic tissue is abundant. The cells concerned are polymorphonuclear leukocytes, which are the first to appear, to disintegrate and to disappear, and clasmatocytes, which appear later, are extremely active, break up less readily, and may become transformed into fibroblasts. In association with the tissue fibroblasts the clasmatocytes form scar tissue.

Finally, fibrosis is the result of the action of substances secreted by the cell on the foreign particles. If a tissue poison results from this chemical action, fibrosis is encouraged, and is progressive, lasting as long as the unaltered irritant remains in the lung.—

Willis S. Lemon and George M. Higgins, *Am. J. Med. Sci.*, 183, 2: 153–164 (Feb.), 1932. E. R. H.

Anthracosis and Silicosis—Sir William Jenkins asked the Home Secretary what number of men had claimed compensation who were suffering from silicosis in South Wales; the number who succeeded in their claim; and the number refused, if any, and upon what grounds. Sir Herbert Samuel replied: "Separate figures for South Wales are not available, but the Returns for Great Britain show that in 1929 there were 12 cases, and in 1930, 18 cases of coal miners who recovered compensation for disablement from silicosis. The Returns for 1931 are only now being collected. I regret that I am not in a position to give the total number of claims made or refused, or the reasons for refusal."—House of Commons (Feb. 11), *Lancet*, 5660: 430 (Feb. 20), 1932. E. R. H.

Industrial Hygiene—A serious silicosis hazard was found at a plant in Maryland which was engaged in crushing and screening quartz for use in various industries. Atmospheric dust tests revealed extremely high concentrations of quartz dust consisting of practically 100 per cent free silica under 10 microns in size. The investigation was made by Dr. B. F. Meriwether, Surgeon, U. S. Bureau of Mines, and J. J. Bloomfield, Asst. Sanitary Engineer, U. S. Public Health Service. Physical examination of employees exposed from 4 to 30 months showed a percentage of defectives which was more than twice as great as those encountered by the examiner in the majority of small industries, although the shortness of the period of exposure did not reveal much positive evidence of silicosis. Nevertheless one of the officials of the plant, whose period of exposure had been longer, died recently from silicosis after less than a year's confinement to bed.

The methods used for eliminating the dust hazard were extremely crude and practically worthless. Recommendations were made for the installation of an efficient dust collector of the cloth-screen or bag type and the enclosure of all grinding machinery, screens, elevators, and conveyor pipes with an ex-

haust ventilation system. Emphasis was placed upon selecting workmen free from defects predisposing to silicosis and that preference be given for those under 40 years of age.

A study was made of the lead hazard in acetylene-torch operation in the cutting of steel plates coated with red lead at the ship scrapping plant of a company at Curtis Bay, Md., where an acute case of lead poisoning occurred. Even though most of the work is conducted out of doors, a compressed air respirator was recommended, since much of the work had to be done in confined spaces aboard ship.

At the Maryland State Normal School acute symptoms of amyl acetate irritation developed in a painter engaged in spray painting without the protection of a booth and exhaust ventilation. An inspection showed that the usual hazards of spray painting (health as well as fire) could be removed.—*Ann. Rep.*, State Board of Health of Maryland, 1930, pp. 191–195. E. R. H.

Refrigerants Tested for Toxicity—At the Atlanta Meeting of the American Chemical Society the first report was made concerning dichlorodifluoromethane, which was described as a nontoxic refrigerant. Subsequently, certain characteristics of this material, which has become known to the trade as Kinetic No. 12, or as F 12, have been determined and the results given considerable publicity.

Tests were made covering 10 of the commonly used refrigerants, subjecting animals to the same for varying periods of time (shown in tables) with the conclusion that the new refrigerant named above was the least toxic.

The results of the tests here discussed show, according to the report, that practically the only hazard which may be introduced with the use of this new refrigerant occurs when vapors come into direct contact with an open flame or high temperature, and are decomposed. Obviously, such a hazard would be decreased in the absence of circulation of the atmosphere, which would bring the heavy vapors into contact with the flame or hot surface, and where there was customary ventilation of the room. In any event, the harmful products of decomposition would be pungent and irritating so that even minute amounts would give ample warning. It seems almost beyond the limits of probability that there would be present any person who could not or would not recognize the warning gases and either ventilate the room or leave it long before experiencing either prolonged exposure or concentrations dangerous to health.—

Indust. & Eng. Chem., News Edition, 10, 1: 3–4 (Jan. 10), 1932. E. R. H.

Gases that Occur in Metal Mines—The gases found in metal mines some of which are explosive and some health-hazardous are methane, hydrogen, carbon dioxide, those of sulphur and nitrogen, carbon monoxide, and, where fires occur, the oxides of arsenic, antimony, etc. In addition very finely divided dusts exist.

A discussion is given of these substances and reports concerning them in the different mining districts of the country. Precautions against gases found in metal mines with recommendations providing against fires and the control of ventilation, temperature and humidity are discussed, likewise the methods for the detection of gases and especial respiratory protection against them.—D. Harrington and E. H. Denny, U. S. Bureau of Mines, *Bull. 347*, 1931, 21 pp. E. R. H.

Time Loss in Mississippi Factories—Reports were received by the Bureau of Industrial Hygiene and Factory Inspection from 10 factories in Mississippi for 1931 which revealed time loss of 4,511 days.

In preventing illness among factory employees, the state factory inspector made physical examinations of 855 factory workers and vaccinated over 2,000 workers—a service available to any factory desiring it. Numerous safety de-

vices were installed to prevent accidents. Occupational diseases are not a big problem in Mississippi factories, although a few are reported each month. —Felix J. Underwood, State Health Officer, *Weekly Health Suggestions*, Mississippi (Received Dec. 1931).

E. R. H.

Rates of Physical Impairments in 28 Occupations, Based on 17,294 Medical Examinations—In a previous study it was shown that the rates of physical impairment in a group of skilled workers tended to be definitely higher than in other groups (professional, business, agricultural). The present study has found that the higher rates are not to be explained, except in a few instances, as due to the hazard of any specific occupation.

"On the contrary, these higher rates seemed to be the result of various factors associated with social, educational. or economic causes, and to be present, in more or less degree, in every specific occupation studied."—Rollo H. Britten, *Pub. Health Rep.*, 47, 1: 1–25 (Jan. 1), 1932. E. R. H.

City Noise—All interested in industry will be interested in this volume which is too extensive for abstracting. Among other features are: "What Noise Does To Us," Noise Measurement, Noiseless Progress, Practical Remedies and Finances. A number of interesting radio talks are also included, with papers by specialists.

The scale of noise levels ranges from a threshold intensity of 1—the least sound change heard by the normal ear—to 10 billion times that amount of noise representing a range from 0 to 100 decibels. A table makes clear the difference between loudness, as measured by the ear (decibels) and intensity, as measured by electrical instruments. A normal conversation, carried on at a distance of 3 feet, has a loudness of about 60 decibels. A small difference in the loudness as expressed in decibels means a tremendous difference in the intensity involved.

A measurement of maximum noise levels from specific sources showed a passenger automobile (quiet) to produce 65 decibels, thunder (1 to 3 miles) 70, radio loud speaker 81, street car 83, roaring lion 87, motor truck 87, elevated train 91, subway 97, riveter 101, automobile horn 102, and hammering on steel plate (almost painful) 113.—Noise Abatement Commission, New York City, Department of Health, 308 pp., 1930.

E. R. H.

Report of the Senior Medical Inspector of Factories—The outstanding feature of the year has been the closer coöperation of the activities of the department with research work. It is recognized that the progress of industrial medicine as a scientific branch of medicine depends on the correlation of the study of conditions found in industry with laboratory observations.

Notifications of various occupational diseases are summarized in a table with comparison of figures for years from 1900 to 1930. In the latter year there were 265 cases of lead poisoning with 32 deaths, 3 of mercurial poisoning, 1 of arsenical poisoning, and 24 of aniline poisoning, 43 anthrax cases with 6 deaths, 194 cancerous cases (epitheliomatous ulceration) due to pitch, tar, and oil including 36 deaths, and 95 cases of chrome ulceration, most of which occurred in chromium plating although there were 15 reported in dyeing and finishing.

In connection with paint spraying the opinion was expressed that it was not necessary for efficient work to produce such quantities of air and paint as to produce a visible cloud. The amount of spray produced appears to depend on the adjustment of air and point delivery from the "gun" and the differences in density of the cloud are remarkable.

Among the anilin poisoning cases were 10 following the inhalation of vapor from 5-chlor-ortho-toluidine, the first thus far recorded. Within a day the workers reported slight headache, drowsiness and eye and throat irritation. Later serious effects were observed which caused 10 men out of 13 to cease work suffering from painful urination with bloody urine.

A table is given for the anthrax cases showing the locality, age, sex, occupation, severity, situation on the body, the material handled, the treatments, and remarks. Of the cases, 24 were incurred by handling hides and skin, 13 from wool, 1 from horse hair, and 5 in other industries.

There were reported 789 cases of dermatitis. This affliction has been steadily mounting in the last 5 years. It is considered that dermatitis can and must be reduced to a handful of cases yearly, but this can be accomplished only by carrying out to the letter the advice in the official pamphlets and placards. A large number of cases is due to the method of cleansing the hands and arms after work which could be largely prevented by coating the skin preliminary to work with a fine film of ointment which will prevent the entrance of stains. In many cases injury of some type preceded the dermatitis while in many others "dermatitis succeeded sepsis."

According to the registrar files, there were 700 certificates of deaths due to pulmonary fibrosis of which number silicosis was mentioned as a cause in 241 which occurred in the following industries in 1930—pottery 52, sandstone 49, coal mining 39, grinding 36, gold mining 23, refractories 12, sand blasting 10, tin mining 10, lead mining 2, granite 2, mining engineering 2, scouring powders 1, slate quarrying 1, file cutting 1, and leather dressing 1.

There were 20 fatal cases of asbestosis without tuberculosis, in 18 of which a post-mortem examination was made. Of these 20 cases, 6 were mattress makers and 6 were carders or cloth weavers. The average age of death of these 20 cases was 38.9 years, and the average length of employment was 14.9 years. Despite the technical difficulties encountered in suppressing the dust in certain processes, it is believed that prevention of the disease is possible.

There were 133 case reports involving fumes and gases, 17 of which were fatal. Of these 94 were due to carbon monoxide, 2 to carbon dioxide, 5 to sulphuretted hydrogen, 4 to sulphur dioxide, 5 to chlorine, 5 to nitrous fumes and 6 to benzol (one of the latter being fatal). Artificial silk works among others were involved in both sulphuretted hydrogen and chlorine poisoning.

At a large aircraft works women were employed spraying cellulose paint on metal framework in a large shop ventilated as a modern dope shop by frequent changes of air. One of three women examined showed the presence of punctate basophilia of some considerable degree, together with epistaxis.

The effects of a cellulose paint said to contain 15 per cent benzol, sprayed by women in cabinets with localized exhaust, were studied clinically and hematologically, with the result that the only almost constant finding was faucial congestion, and this was not confined to those on spraying operations. No constitutional symptoms or results suggestive of benzol (or homologues) absorption were recorded. A more detailed examination seems to endorse the previously expressed opinion that with a moderate temperature and good localized exhaust ventilation, cellulose spraying has not affected the health of such workers. In a few cases where there has been complaint, a rapid improvement was noted with betterment of ventilation and a lower temperature. The occurrence of complaints bears a definite relation to conditions of work, but not to the percentage of benzol (or homologues) contained in the material sprayed.—

John C. Bridge, Senior Medical Inspector of Factories, *Ann. Rep.* for the Year 1930, pp. 94–122. E. R. H.

FOOD AND NUTRITION

The Reserves of Vitamins A and D in Some Cartilaginous Fish—It has been stated for some time that certain liver oils of cartilaginous fish are antirachitic, particularly the liver oil of the ray. There is, of course, the consideration that cartilaginous fish are naturally rachitic, when comparisons are made between the calcification and the phosphate content of these fish with the bony fish, although in America, Bodanski and Bakwin did not find any difference in proportion of phosphate in the tissues of the two kinds of fish.

This investigation has been made on vitamins A and D in the liver oil of three varieties of cartilaginous fish: *Centrina vulpecula,* Rondelet, *Scymnus Lichia* Muller et Henlé, and *Raja batis* Linné. These oils prepared respectively in 1924, 1925, and 1926, showed marked differences in gravity, saponification values, iodine number, and fatty acids, also in unsaponifiable material.

White rats were used for the biological studies and the rachitic and growth values were compared with a good commercial cod liver oil prepared in 1928. Assuming a basis of 100 for the cod liver oil, the following values were obtained for vitamins A and D in these species:

	Scymnus Lichia	*Centrina vulpecula*	*Raja batis.*
Vitamin A..	90	40	30
Vitamin D..	40	35	25

While a slight correction should possibly be made on account of their age, the antirachitic value of these oils is greater than that of one bony fish (*Merlucius Merluccius* Linné) examined previously. It appears that cartilaginous fish can store appreciable amounts of vitamins A and D in the liver which does not have any influence on the skeleton.

Formation of some bony tissue in these fish such as teeth and dermal plates indicates that they are capable of elaborating some tissue with normal mineral content.—Amile Andre and Raoul Lecoq, *Compt. rend. Acad. d. sc.,* 194:912 (Mar. 7), 1932.

The Vitamin D Content of Red Palm Oil—The flesh or pericarp of the fruit of the oil palm, *Elaeis guineensis,* contains about 60 per cent, by weight, of red palm oil. This oil is known to be a good source of vitamin A. Four samples of red palm oil were tested for their vitamin potency on albino rats. The animals were fed Steenbock and Black's rachitogenic diets and the daily dose of oil necessary to prevent the occurrence of rickets at the end of 35 days was determined. The richest of the oils contained less than one-thirtieth as much vitamin D as cod liver oil. Red palm oil is considered a good source of vitamin A to use when it is desired to limit the quantity of vitamin D in the diet.—William John Dann, *Biochem. J.,* 26:151, 1932.

Vitamin A and Carotene. IX. Notes on the Conversion of Carotene to Vitamin A in the Cow—The author concludes:

1. Although the body fat of the cow is normally characterized by the presence of small amounts of carotene, vitamin A as such is present in preponderating amounts both in the liver- and milk-fats. Since the cow is purely herbivorous this finding suggests that carotene undergoes the conversion to vitamin A previously demonstrated in the rat.

2. This conclusion is supported by the finding that the feeding of carotene, in the form

of carrots, to a cow at the end of the winter stall feeding period resulted in an increase not only in the carotene content but also in the vitamin A content of the butter-fat.

3. The degree of pigmentation of butter-fat, when adequate carotene is available in the diet, is determined by bread. Butter-fat derived from Jersey cows gave a yellow value twice that obtained with butter-fat derived from Shorthorn cows under similar nutritive conditions.

4. When the cow is at pasture the output of carotene and vitamin A in the butter-fat is very small in comparison with the amount of carotene available in the diet. On the other hand, during stall feeding upon a diet almost devoid of carotene the reserves of vitamin A available in the liver and elsewhere may be insufficient to meet the demands of prolonged lactation.

These deductions with respect to vitamin A and carotene are based on colorimetric determination.—Thomas Moore, *Biochem. J.*, 26:1, 1932.

The Value of Some Vegetables in Nutritional Anemia—In this experiment, dried spinach, lettuce, tomato, asparagus, broccoli, and turnip greens were studied for their effectiveness in curing nutritional anemia in the rat. Dried spinach when fed *ad libitum* and yielding an average daily intake of 0.43 mg. of iron and 0.0061 mg. of copper, effected hemoglobin regeneration in 3 to 4 weeks.

Lettuce plus tomato mixture, asparagus, lettuce, spinach, and broccoli—all fed at a level affording 0.20 mg. of iron but different amounts of copper—permitted hemoglobin regeneration in 4 to 5, 5 to 6, 6 to 7, 6 to 7, and 7 to 8 weeks, respectively, in the order of decreasing copper intake. Since variations in the iron and copper content of these vegetables are known to exist, it is to be borne in mind that a different order of anti-anemic potency would probably result from another set of the same vegetables. Turnip greens fed at a level furnishing 0.425 mg. of iron and 0.0179 mg. of copper brought about rapid regeneration in 3 to 4 weeks. When fed at the same level of iron, a lettuce and tomato combination was found more effective than lettuce alone.

The above vegetables are, therefore, important sources of the minerals concerned in normal blood formation.

Iron alone or copper alone, when fed in the form of inorganic salt solutions, permitted only partial blood regeneration, whereas solutions containing both iron and copper effected rapid recovery of hemoglobin.—Harold Levine, F. B. Culp and C. B. Anderson, *J. Nutrition*, 5:295 (May), 1932.

Relative Quantities of the Heat-Stable and Heat-Labile Fractions of Vitamin B in Raw and Evaporated Milk—In this experiment, three different methods were used:

A. The separation of the two factors by fractionation of the milk solids and confirmation that the limiting factor is the heat-labile fraction.

B. Quantitative estimation of the relative amounts of the heat-labile fraction in raw and evaporated milks.

C. Quantitative estimation of the heat-stable fraction in raw and evaporated milks.

The results in the growth experiments show that milk contains all the water-soluble vitamins necessary for the growth of the rat, but that relatively large volumes must be taken to obtain optimum growth. Commercial evaporation has not seriously affected these substances.

These experiments have shown that commercial evaporation of cows' milk destroys about one-sixth to one-fifth of the antineuritic heat-labile fraction. All cows' milk seems to be quite low in this factor, however, 25 c.c. (3.49 gm. solids) being required per rat per day for optimum growth. Milks do not apparently vary widely in their antineuritic content as purchased on the market.

There is no identifiable destruction of the heat-stable, growth-promoting fraction during commercial

evaporation. Milk is capable of adequately supplying this fraction for optimum growth.

The amount necessary, while lower than that required for the antineuritic factor, is also fairly large, that is 17 to 20 c.c. (2.37 to 2.78 gm. solids). The question of the identity of this heat-stable factor with the antipellagra fraction is still unsettled.—Leo. T. Samuels and Fred C. Koch, *J. Nutrition*, 5:307 (May), 1932.

CHILD HYGIENE

PALAMA SETTLEMENT

A UNIQUE combination of medical, dental, nursing, recreational, and health educational activities for children is to be found at Palama Settlement, located in the most congested district of Honolulu.

This institution had its beginning as a social center under church auspices in 1896. An extension of the services of the Palama Chapel took place in 1906, at which time its name was changed to Palama Settlement. A gymnasium and a swimming pool were added to the plant. Interest in the prevention of tuberculosis opened a vista for a broad public health program, in which prenatal and child welfare conferences were developed. Free dental clinics were established, and school nursing was initiated. In 1925 Palama Settlement moved into more commodious quarters, provided with recreation rooms, gymnasium, and swimming pool, an entire building for medical and nursing services, and a separate building for dental clinics made possible through the Strong foundation.

The demands upon the settlement became so great that in 1929 its direction was placed in the hands of a full-time public health administrator. Since then the work has been fully coördinated with all the health activities in the community. This has been especially helpful in the child health field. Dr. Philip Platt, the director, says:

Palama has become an aggressive leader in public health and preventive medicine. Efficiency of its medical and dental work now grown to some 68,000 services yearly has greatly increased. Standards of its public health nursing service have become notably high, and the contribution of the recreation department has been expanded many fold. Public health education, through the medium of its new Tuberculosis Committee, has taken forward strides. The more fundamental factors involved in the prevention of the ill health and economic misery of the family are promoted through a mothers' health clinic. Venereal disease is being vigorously combated. Participation on a score of committees has enlarged Palama's contribution to the community's welfare.

The Settlement as a voluntary agency stands ready as always to assist the official governmental agencies in the adequate performance of their tasks. It seeks to return to the Territorial Board of Health those activities which rightly belong to the official agency, such as the venereal disease clinic. It would gladly transfer its medical outpatient department to the Queen's Hospital, with its excellent in-patient department, believing that the best medical service to poor and the best training of a hospital staff can be had only when out-patient and in-patient departments are brought together as equal units of a hospital center. These developments, however, seem far distant.

The immediate future of Palama lies along the lines of preventive medicine, health education and youth upbuilding. The preventability of many communicable diseases, and the spreading of knowledge as to how to prevent disease and keep well, will be stressed with ever increasing emphasis. Not only tuberculosis, but mental hygiene, heart disease, and cancer control, the prevention of blindness, accidents, and venereal disease must

increasingly occupy the energies of Palama Settlement. Delinquency, because the boy or girl has no normal satisfying outlets in organized recreation or creative interests, will be aggressively combated as they have in the past. . . .

Every summer 60 boys, then 60 girls, spend 4 weeks each at Palama's Fresh Air Camp on windward Oahu. Total weight gained last year: 288 pounds; 5 times the normal gain per child.

PALAMA'S RECREATION ACTIVITIES

2,096 full memberships
2,234 use the children's playground
40 Palama and Community Clubs
26 leagues, 181 teams, 2,352 players
65 other teams played at Palama
1,161 physical examinations
1,997 children given physical education instruction during school hours
1,030 given swimming instruction
56 Juvenile Court boys supervised
2,644 used Recreation Camp at Waialua.

In Honolulu a joint nursing service is maintained by Palama Settlement and the local Board of Health. A generalized nursing program is carried out effectively in 25 nursing districts. In 1931 the public health nurses assisted in the health examination of 5,701 school children and gave 833 group inspections and 18,903 routine treatments.

Palama's $200,000 budget brings medical, dental, nursing, recreation, and health education to more than 50,000 individuals. City appropriations, Chamber of Commerce donations, United Welfare Fund contributions, private foundation funds and institutional receipts balance the budget. Health education is Palama's corner stone.—

The Story of Palama Settlement, *The Friend*, Apr., 1932, Honolulu, Hawaii.

Summer in Child Health Work—The summer season offers an exceptional opportunity to strengthen and extend health work among children. Summer should be conducive to better health conditions. This is the season of lowest mortality in childhood, as a result of the intensive public health efforts of the last 25 years. It may, however, be a time when latent defects manifest themselves and when the children are exposed to accidents and certain of the infections easily disseminated in camp life.

The opening of playgrounds, summer camps, and vacation centers gives the health authorities a chance to check on their sanitary conditions and to raise standards. For this purpose it is very helpful to create summer camp councils in the large cities. Some cities have devised score cards for camps, which have been placed in the hands of the camp director so that each item may be checked. This may then be evaluated by the local health department. The Cleveland Camp Council has used such a card with good effect for several years. The items appearing on this score card for camps are as follows:

SCORE CARD FOR CAMPS

Health Standards:

Resident doctor or nurse
Physical examination of all child campers
Physical examination of camp staff
Physical examination of food handlers, including Wassermann and typhoid test
Hand washing always practised after leaving latrines, especially by food handlers
Every child in camp vaccinated
Counsellors refer to children's health cards in supervising activities
Daily health inspection of children at camp
Fresh vegetables and fruits served every day
Milk served three times every day
Individual drinking cups and towels for all
Fly control in kitchen or dining room
Mosquito control methods followed

Safety Standards:

Water for drinking, washing, and cooking analyzed by city health department before opening of camp and every 2 weeks afterward
Water used for swimming also analyzed by city before and during camp
Use only Class I pasteurized milk, approved by city
Safe refrigeration for perishable foods and milk
Garbage kept in covered cans and disposed of daily

Swimming only under supervision of Red Cross examiner
"Buddy" system in force during swims
Life-savers have thorough knowledge of prone pressure method of artificial respiration
Swimming periods never sooner than 2 hours after meal
Boats safe and never overloaded
Immediate isolation of sickness cases—contagious or otherwise serious

Equipment Standards:

Well equipped dispensary for caring for injuries
Special room or tent equipped for isolation cases
Sanitary latrines and safe sewage disposal
Convenient hand washing facilities near latrines
Proper equipment to facilitate washing before each meal
Equipment for children to have one warm bath with soap weekly
Comfortable dining room with shelter against bad weather
Hot water and sanitary drying facilities for dishes
Adequate fire fighting equipment: extinguishers, pails, ropes, ladders, and hose
Comfortable sleeping quarters with adequate protection against weather
Single cots with clean mattress and bedding, and at least 24 feet of space for each camper.

Another opportunity for health work among children is the summer play schools which have been established as parts of teacher-training institutions. In these schools, medical examinations, health inspections, and a considerable amount of health education can be carried out through the daily routine. It is always possible to use the lunch period as a time in which to develop proper attitudes toward food, as well as the suitable selection of food. The parents themselves usually take a great interest in the play schools; accordingly, a coöperative arrangement can be established with the home.

A very successful summer health school program has been carried out by the Los Angeles County Health Department for several years. During this summer they will promote this project in coöperation with the summer session of the University of California at Los Angeles. Two informative articles have appeared recently in *Hygeia* outlining the practical aspects of coördinating the health activities of the summer play schools.—Summer Play Schools, *Hygeia*, 10, 6:555–558 (June), 1932.

PUBLIC HEALTH NURSING*

The Canadians Survey Their Nursing Situation—The united forces of the Canadian Medical Association and the Canadian Nurses' Association have during the past 2 years been making a study of the nursing situation in Canada which will probably lead to the revolution of the system of nurse education and the organization of nursing services in that country.

The Survey Committee consisted of 3 prominent physicians and 3 prominent nurses, and the director was Dr. A. M. Wier, Head of the Department of Education, University of British Columbia.

A 581-page report has been published rather as the beginning for thought and action on the part of physicians, nurses, and the general public than as the conclusion of the matter. Provincial and national associations are already studying the facts presented by the survey with so much interest that the committee is confident that when a later survey is made a much happier nursing situation will be found.

A quotation from the report:

> The evidence of the survey is conclusive on many points. Among these are that schools for nurses are not financed and organized as schools; the selection of students, their number, the curriculum and the teaching methods are not governed by public needs; the so-called schools are graduating nurses in too large numbers for resident service in homes and hospitals rather than for the developing public health services which are crippled by a shortage of qualified nurses; some system differing from the present one of direct payment by the patient must be created to provide essential nursing care in illness as well as in health.

When one studies the information on personal backgrounds, intelligence quotients, training, employment, salaries, and personal satisfactions in jobs revealed in this report, it is not difficult to understand why the public and the medical and nursing professions are dissatisfied with the nurses' place in the national life of Canada.

The questionnaires returned by 1,475 doctors showed that while there was a 34 per cent surplus of graduate nurses, there was an actual shortage of public health nurses. The Survey Committee suggested that an increase of 20 per cent in the number of public health nurses in Canada generally, and 40 per cent in the Maritime Provinces would mean an excellent investment of money. The committee recommended, however, that public health nurses must be carefully selected and trained to succeed, and proper coördination of their services to prevent overlapping should also be maintained.—Eunice H. Dyke, The Survey of Nursing Education in Canada, *Canad. Pub. Health J.*, XXIII, 4:195–197 (Apr.), 1932.

Public Health Nursing in New York State—The Division of Public Health Nursing of the New York State Department of Health was created by legislative act in 1913. In that year there were 135 public health nurses in upstate New York; now there are approximately 1,500. While these nurses may be called visiting nurses, school nurses, tuberculosis nurses, child hygiene nurses, etc., they are all classified as public health nurses.

The present staff of the division of public health nursing of the State Health Department consists of "a director, an assistant director, an extension secretary, with an assistant, in

* Please send printed matter or other material relative to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

charge of special training courses for nurses; an office and visiting nurse; 14 district supervisors, responsible to the division for standards and procedures and to their respective district state health officers for development of the local public health nursing program; and about 60 other public health nurses who work in the field to promote the interests of various divisions of the department."

The State Education Department now employs *2* state-wide supervisors of school nursing appointed from a civil service list.

Of the 1,500 public health nurses working in upstate New York about 60 per cent are paid entirely from public funds; 583 are paid by private or voluntary agencies, and about 200 more are supported partly by official and partly by unofficial agencies.

After getting this birdseye view of public health nursing in the state the following recommendations of the New York State Health Commission take on new interest:

That as there are developed through the state, county health departments, each with an adequate staff of public health nurses, a qualified supervising nurse be placed in each unit under the direction of the county health commissioner, who shall (a) be responsible for the work of staff nurses; (b) serve in an advisory capacity to and coördinate the work of all public health nurses in the county.

That the State Department of Health be given authority to develop a better qualified public health nursing personnel in the state through:

a. Enforcement of qualifications outlined by the Public Health Council
b. Extension of supervisory and advisory service to local nurses and services where local supervision is found to be inadequate
c. Provision for more specialized supervision in mental hygiene, social hygiene, social service and nutrition
d. Extension of the present program of staff education

That greater coördination of school nursing with the general nursing services of the state be developed through more adequate supervision of full- and part-time school nursing and that additional school nursing be provided, particularly in rural and village areas.

That the State Department of Health endeavor to develop local public health nursing services on a county unit basis providing for:

a. A state-wide program of generalized nursing, to include rural school nursing
b. Competent county supervision
c. State supervisory and consultant service where local supervision is inadequate and does not follow accepted standards of supervision

That the State Department of Health make a concerted effort to promote local public interest through community activities which tend to advance county nursing programs.

That the nursing staff of the State Department of Health be reorganized, reallocated and classified as general district supervisory nurses, consultant specializing nurses and field nurses, and that suitable qualifications be required and salaries paid commensurate with the duties of such positions.

That the Public Health Council increase the present required qualifications of public health nurses, both as to preliminary education and postgraduate training.—

Public Health Nursing in New York State, Reprint from the *Report of the New York State Health Commission*, 1932.

Requirements for Effective Work in Mental Hygiene—Mental hygiene is interested in insanity and mental defectiveness, in stimulating psychiatric research, and in promoting a healthy public attitude toward these afflictions. It is interested in twists and distortions of personality, behavior problems, and in the establishment of all kinds of clinics for their effective treatment. But mental hygiene must be broader than this even, and interest itself in the general enrichment of life for all.

People who come in close contact with their fellow men, particularly if they have some responsibility for their direction, like public health nurses, for instance, and social and court workers, are in the best position to help achieve these aims of mental hygiene. Misfits in this field, however, are not to be

tolerated, and there are some requirements if one is to do effective work.

First one must have such a love for human nature that she will be fascinated by the study of its operations, and will want to gain an understanding of the individual so that she can be guide, philosopher, and friend. A public health nurse who wishes to do real mental hygiene work should constantly be asking herself about her clients: "What are the reasons lying back of this behavior? What are the cravings of this man's soul, and how is he satisfying them? Would I not act in exactly the same way if I were exposed to the same environment and had the same mental equipment, the same mental assets and liabilities?"

Then one has to be a student of human nature. There are two ways of gaining knowledge in this field: one is through books (three recommended are Strecker and Appel's *Discovering Ourselves;* Grove and Blanchard's *Mental Hygiene;* and Carl Menninger's *The Human Mind*), discussions, and lectures. The other way is through continual study of people. Be familiar with these phenomenons of the unconscious mind: repression, sublimation, rationalization, etc. Remember that we cannot explain behavior, whether conscious or unconscious, particularly if it is complex, unless we go beneath the surface and study the subconscious motivations.

Be familiar with the departures from mental health. Know what the criterions for mental health are. Know when a person is slipping. One way is to observe how an individual satisfies his ego hunger, how he submerges his own self interests in community interests, the way in which he faces the facts of life, including himself. One unhealthy way of satisfying ego hunger is by antisocial conduct; another is by thrusting oneself forward through self deception and delusions of importance when one fails to secure recognition through merit and achievement; another way is ruthlessly to dominate, not one's equals, but those in the home, the office, the factory, the store, who, because of their positions, cannot avoid the domination. "It is always unhealthy to dominate unless domination springs from superior ability and better background."

A healthy way to satisfy ego hunger is to project oneself into work and be satisfied if it wins approval.

With adults we can study motivations directly, but with children who have not yet reached the philosophic stage we must study the environment and the influences that affect their growth—their home, their school, their playground, their mother and father.

It is very important for mental hygiene workers to study themselves first of all, to become their own patterns of reaction. This will keep them from "high-hatting their clients," for as soon as the social worker has evaluated herself she becomes common clay with the whole group, and will find that she can take a lesson from the prostitute or thief.

Another suggestion is to sit in on the conferences in your mental health clinics and gain an insight into the work from the psychiatrists and psychologists. A mental health clinic that does not energize a whole community of nurses, social workers or physicians is not worth the money put into it.

One person who has a real insight into mental hygiene and can use it to improve the mental health of all around her is worth her weight in gold. The one priceless thing is personality.—C. M. Hincks, M.D., Requirements for Effective Work in Mental Hygiene, *Indiana Bull. of Charities and Correction*, 203:213–218 (Mar.), 1932.

EDUCATION AND PUBLICITY*

Health Education Institute, October, 1932—The first Institute on Health Education to be conducted by the Public Health Education Section will be held at Hotel Willard, Washington, D. C., October 22–24, 1932, immediately preceding the annual meeting of the A.P.H.A. which opens Monday, October 24. The official announcement says:

The purpose of the Institute is to provide instruction in the content and methodology of health education to a limited number of persons actively engaged in health education.

The students whom it is desired to attract to the Institute, may or may not have had training in health education in one or the other of the very few institutions where it is available. They may have had a little or considerable experience. They may devote all their time to this work or it may be merely one of several activities. In any event, health education is for them a major preoccupation and they must from time to time formulate programs of activities in health education and carry them through.

At the Annual Meetings of the American Public Health Association there gather a large number of experienced individuals from various divisions of the public health field. The Health Education Institute is scheduled in connection with the Annual Meeting so that advantage may be taken of their presence.

The staff of the Institute is as follows:

Iago Galdston, M.D., Director, Medical Information Bureau, Academy of Medicine, New York, N. Y.

Bertrand Brown, Milbank Memorial Fund, New York, N. Y.

Evart G. Routzahn, Russell Sage Foundation, New York, N. Y.

Mary Swain Routzahn, Russell Sage Foundation, New York, N. Y.

Clair E. Turner, Massachusetts Institute of Technology, Cambridge, Mass.

W. W. Peter, M.D., Cleanliness Institute, New York, N. Y. .

Ira V. Hiscock, Yale University, New Haven, Conn.

H. E. Kleinschmidt, M.D., National Tuberculosis Association, New York, N. Y.

George C. Ruhland, M.D., Commissioner of Health, Syracuse, N. Y.

W. W. Bauer, M.D., American Medical Association, Chicago, Ill.

Frank J. Osborne, Health Officer, East Orange, N. J.

Raymond S. Patterson, John Hancock Mutual Life Insurance Co., Boston, Mass.

Active health education workers in official departments of health—state, county and city—and in voluntary agencies are invited to enroll.

Health officers and directors of health organizations are urged to send to the Institute the individuals responsible for health education activities in their units.

Application for enrollment in the Institute should be made on the prescribed form attached to this prospectus.

The registration fee is $5.00 and must accompany application. Payment of the fee entitles the student to all the privileges of the Institute and to private consultation with the instructors, if desired. Students, whether or not they are members of the American Public Health Association, will enjoy the special railroad rate of three-quarters of the regular round-trip fare.

Mail checks and applications to: American Public Health Association, 450 Seventh Ave., New York, N. Y.

WHAT IS THE PROGRAM OF THE INSTITUTE?

Saturday, October 22, 9 A.M.–12:00 *Health Education Instruments:* Discussion of the instruments employed in Health Education: pamphlets, weekly and monthly publications and bulletins, charts, posters, health talks and radio talks; their special utility and their limitations. Discussion leader: Evart G. Routzahn. Discussers: Bertrand Brown, W. W. Peter.

Saturday, October 22, 2:00 P.M.–5 P.M. *Sources of Information:* The responsibility of the health educator for the authenticity of his material. How to go about securing de-

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

pendable information to present on the items selected, to the indicated audiences, and through the preferred media. Tapping authoritative sources. The coöperation of the medical profession. Discussion leader: Ira V. Hiscock. Discusser: Clair E. Turner.

Sunday, October 23, 9:00 A.M.–12:00 *Building Programs:* How to formulate a program of health education suitable to the community. How to determine the allocation of staff, money and effort. This problem will be considered from the viewpoint of both the official agency, that is, the department of health, and of the voluntary agencies. Discussion leader: Frank J. Osborne. Discussers: Ira V. Hiscock, Raymond S. Patterson.

Monday, October 24, 9:00 A.M.–12:00 *Program Execution:* The avenues through which the program might be formulated: the population at large, special groups, schools, primary and secondary, teacher training organizations, work shops and work places, commercial organizations, etc. Discussion leaders: W. W. Bauer, George C. Ruhland, Evart G. Routzahn.

A question period will be arranged for at the end of each discussion, though the participants in the Institute will be privileged to interrupt the discusser with pertinent questions.

We Make Mistakes—We are so sure of it that all copy for this department of the JOURNAL is submitted in advance of publication to those who should know the facts. If we are slow in sending out the checking copy we discover an excess of errors too late for correction. Here are the latest examples:

Eastman Kodak Company wish you to understand that any Dr. Haggard talks mentioned in this department are out of print. Only copies of talks yet to be issued can be supplied upon request.

Committee on the Costs of Medical Care wishes it to be understood that among their *free* publications are abstracts only of the larger, fuller reports published by the University of Chicago Press.

Infants' and Children's Department is published at 1 E. 35 St., New York. This is the trade journal interested in "baby weeks" and other health services offered by department stores.

B. R. Rickards of New York State Dept. of Health reports that the Wednesday broadcasts of the department are at 6:25 E.D.S.T. over WGY.

American Child Health Assn. wishes me to emphasize that the bibliographies and other publications mentioned as *free* are supplied thus only as single copies. Quantities for a school or association are sold at low rates.

Also the *Emergency Nutrition Special* and the *Child Health Bulletin* mentioned under "Depression" are out of print. The valuable statement by Dr. Sherman has been reprinted. *3 cents for single copies.* Address at 450 7th Ave., New York.

Dr. Huntington Williams of the Baltimore Health Department emphasizes the pitfalls in editorial condensation:

> The weekly health talks are broadcast under the joint auspices of the Baltimore City Health Department and the Medical and Chirurgical Faculty of Maryland and are given over Station WBAL each Tuesday at 6:15 P.M. Beginning April 26 the talks will be at 5:15 P.M. or 6:15 P.M. daylight saving time.

Come to Washington to Learn—Some of the attractions at the October, 1932, meeting of the A.P.H.A. are set forth most eloquently by Program Chairman Raymond S. Patterson:

> The clinic will be the method employed once more by the Health Education Section at the Washington Annual Meeting. A "clinic" has to be attended for the method does not lend itself to successful reporting. You can't *read* about the operation and its successful outcome, you must be present to *see* it.
>
> There will be another old fashioned clinic on printed matter! S.R.O. (standing room only—to you). Brain children of several proud health workers will be subjected to treatment guaranteed to make the anti-vivisectionist's flesh creep. Dr. Kleinschmidt will be the cruel fiend in human form who will do most of the dissecting.
>
> The very best in health broadcasts will come

to you "over the air"—offerings by Haggard, Bauer, Rice, *et al*. Then the critics will be merciless. You will leave that clinic cautious about rushing into that inviting field where angels fear to tread.

There will be more meetings, too, at which other health propaganda methods will be taken apart to "see what makes it tick." But these are reasons enough why you must plan now to come to Washington to learn.

"Health Plays for School Use"—This is the title of a 4-page mimeographed pamphlet, with annotated lists of plays and books on the technic of expression. American Child Health Assn., 450 7th Ave., New York. *Single copy free*. From the introductory paragraphs we quote:

It is important, if the richness and depths of a child's imagination and emotional nature are to be permitted free expression in the interest of learning, that the lesson in play form be not only truly imaginative, but also that its factual content ring true, and that the action have, inherent in it, real dramatic possibilities.

In selecting the health plays here listed, an effort has been made to choose those most naturally childlike, most naturally dramatic.

Teachers should remember, however, that the richest vein of dramatic possibilities for learning always lies in the child himself—especially in the little child. His original dramatic expression, in words and action, of an idea that is clearly presented to him and that has become thoroughly familiar, will always have greater educational value than any dramatic activity prearranged for him by others.

Broadcasting By Voluntary Organizations—The United States Office of Education is collaborating with the National Advisory Council on Radio in Education in making a survey of the present and contemplated uses of radio broadcasting by voluntary organizations. The principal purpose of this study will be to make available present plans and practices as a means of promoting mutually helpful relations between broadcasting agencies and organizations with public service objectives.

All state and local associations making use of radio or planning to do so are invited to ask the Office of Education, Washington, for the report blank which contains but 5 questions to be answered.

The Health Evaluation of Advertising—A recent letter from a public school director of physical education:

I am giving a lecture to a group of elementary teachers on "The Evaluation of Health Through Advertising" and I would appreciate the fact if you could give me some help. The gist of the subject is to evaluate statements made by people who are advertising health products.

This request brought a variety of interesting information and suggestions. What interested me most were two lesson outlines from Mary P. Connolly, Detroit Department of Health, on "Evaluating Health Information" and "Patent Medicines." Each presented "Aim," "Subject Matter" and "Procedure." The "Aim" of the first lesson:

To develop ability to judge health information intelligently.

To develop an intelligently critical attitude toward health advice.

To realize the folly of believing in health racketeers.

What can be taught to adults and young people as to discrimination in favor of sound and against unsound advice?

What You Would Like to See at Washington—What kinds of health education materials and helps would you like to see at the Washington meeting of the A.P.H.A.?

Have you any contributions? Any ideas? Any desires?

We had collections of the following at Montreal: Summer warnings and advice, Winter warnings and advice, Health examinations, Diet and weight, Diphtheria, Cancer, Rural sanitation, Colds, and Children and schools.

Will you select the best on those topics you have ever issued and send, to bring the collections up to date?

Please select the better examples from all types of publicity and health educational material you have ever issued and send for a special display? Address: Washington Display, Evart G. Routzahn, Russell Sage Foundation, 130 East 22d St., New York.

A Suggestion and a Request—That (1) so far as possible pamphlets which are sold shall carry the price (preferably on the cover page), and (2) that copies of pamphlets, reprints, reports and other material sent to editors and those who make up reference lists for publication be accompanied by a memorandum stating whether or not copies are available—free, for a specified amount of postage, or for a set price. A few correspondents follow this very helpful practice. Then neither editor nor reader need guess—or write extra letters of inquiry.

It is important in sending pamphlets and research reports to *Publishers' Weekly* that *the price be noted on the front cover*. Otherwise they will add "apply," which reduces the number of inquiries or makes extra correspondence necessary.

Don't "Condescend" to Your Audience—Evidently Heywood Broun has not seen all of the good writing that is being done on health topics. But there is enough of the other kind to warrant our quoting several paragraphs from the *New York World-Telegram* (June 4, 1932). We may wish to check up on what we say or write.

The New York Academy of Medicine gave a dinner the other night to the newspaper men, and we all made speeches. First, some doctor would get up to say how much he admired the standards and ethics of journalism, and then a reporter would reply by laying it on pretty thick about the physicians.

I was not quite in accord with the spirit of the evening, for its seems to me that the efforts to make your liver and mine good feature copy have not been altogether happy up till now. I used to be among those who urged the members of the medical profession to abandon their secrecy and come out into the open to tell us what they were all about. But by now I have begun to lean back to the old Victorian tradition of reticence for healers.

It is not impossible to present scientific subjects in a popular and accurate form, but at least it is difficult. And when a doctor begins to write for newspapers or magazines of general circulation he has a tendency to go James M. Barrie on his public. I wish these missionaries to the laymen would not condescend so confoundedly. I would much prefer to know nothing at all about my heart than have it told to me in the form of a bedtime story.

When Speaking About Cancer—*Cancer Compend: A Handbook for Speakers*, by R. V. Brokaw, M.D., American Society for the Control of Cancer, 25 West 43d St., New York. 44 pp. *Free*. Includes: "Approach to the Subject," "Important Facts," "Special Questions," "Statistics," "Bibliography." It is dated. The bibliography gives number of pages, address and price of each book.

So much of the "Approach to the Subject" has a general bearing on the presentation of health topics that we quote it in full.

Public speaking ability is fundamental in the successful presentation of any subject to any audience. No amount of knowledge can compensate for the lack of clear thought and precise statement under such circumstances.

The acceptable presentation of a public lecture on cancer is especially difficult because of the extensiveness of the field, the complexity of the problem, the gravity of the situation and the prevalent dread of the disease.

Conceding the possession of fundamental facts by the speaker, the method of presentation is important. The talk should by all means be adapted to the audience. The style of delivery suitable for the women's club, for instance, will not do for a radio broadcast. Non-technical language should always be employed. Brevity in the more formal part of the talk is preferable. An opportunity to

ask questions is generally appreciated; and the resulting discussion is often the most profitable feature of the meeting.

Experience has demonstrated that the following admonitions may well be heeded:

It is not wise to underestimate the experience of your audience. They may not be familiar with your specialty, but in some fields they may excel you.

One should not assume an *ex cathedra* attitude in presenting his subject. Judgment is never infallible; there are no unalterable conclusions; and most people are quick to resent an undue manifestation of authority.

Sentimentality should be avoided. An emotional appeal rarely produces any lasting convictions or stimulates any effective action.

Exaggerated statements are unnecessary. The exact truth about cancer is sufficiently hopeful, and sufficiently hopeless, to satisfy any degree of optimism or pessimism.

The pessimistic aspect of the cancer situation should not be emphasized. Pessimism is strongly conducive to paralysis; and that in cancer is most unfortunate.

Statistics should not be presented without a reasonable degree of certainty as to their accuracy and source. Absolute accuracy in quoting individuals is very important.

Critical comments regarding differences of opinion or of practice among physicians may profitably be omitted. Desirable results are not obtained by the creation of distrust.

The direction of attention to your own ability is likely to be embarrassing. Your audience will question your motive; and your colleagues will resent the inference.

An exhibition of prejudice regarding the treatment of cancer is unwarranted. Surgery, X-rays and radium are equally effective in their respective fields.

The recital of the details of surgical operations and of similar procedures is very undesirable. Such descriptions create fear and serve no useful purpose.

"Discrimination In Health Teaching"—An address on this subject by W. P. Shepard, M.D., has this "Conclusion":

Thus I have attempted to show that the rapid development of the school health program, its worthwhileness, its inspiration and its large rewards, taken together with the comparative infancy of the public health movement, have combined, first, to create a very fine liaison between the teaching and medical professions, and second, a rather insistent demand by the teachers for more facts and more results from the doctors. This pressure might conceivably result in misunderstanding between the professions with resultant loss of confidence by teachers in the whole health movement. This is a catastrophe which can be prevented if foreseen. Public health men and physicians are gradually understanding more clearly what the teacher wants and the importance of coöperation. We realize that only by having children taught health facts and how to apply these facts can we hope to put the discoveries of preventive medicine to their best use—the prolongation of life. This can only be done when the teacher appreciates her responsibility to exercise a fine discrimination in selecting the content of her courses. And such discrimination can only be effective when the teacher understands something of the scientific approach and method, the pitfalls of fallacious reasoning, the limitations of science, and the necessity of selecting her authorities carefully.

A paper to be added to the library of the health educator whether working among adults or children.—Reprint from *California Quarterly of Secondary Education*, Berkeley. Apr., 1932. Apply to the author, 600 Stockton St., San Francisco, Calif., or Metropolitan Life Insurance Co., New York. *Free.*

Mental Hygiene for the Public—"Future Public Education in Mental Hygiene," by Sanger Brown, II, in *Am. J. Psychiat.* (Jan., 1932), and *Psychiat. Quarterly* (Jan., 1932), favors widespread public education.

Dr. Brown's article deals with the possibilities of public education in the promotion of mental health on a basis analogous to the widespread educational work in those fields of public health that deal with the human body. He states that "the time is fast approaching when public education in mental hygiene will take on the importance and significance of the campaign against tuberculosis, cancer and other widespread physical disorders."

Further he continues, "While many people are already well informed on the subject, education in mental hygiene for the great mass of people is practically virgin soil. Through the processes of an educational campaign the important facts of mental hygiene will gradually filter through from the more enlightened to the less informed and will eventually reach the average man.

"While a good deal of the material of mental hygiene is theoretical and there are some controversial subjects which should be avoided, a great deal that is definite and clear has already been learned with reference to the nature, the causes, the treatment and prevention of mental diseases, and there are certain essentials of this knowledge which should be communicated to the public. The commoner forms of mental adjustments and conflicts which so many persons experience should be made clear. Such conditions, for example, as anxiety states, fears, depressions, emotional instability, mental exhaustion, irritability, extreme sensitiveness, undue aversions, and innumerable other minor mental ills are suitable subjects for public education."—Paul Komora.

NEW

The Health Bulletin, Bureau of Health, Knoxville, Tenn.

Mental Health Observer, Missouri Society for Mental Hygiene, 613 Locust St., St. Louis.

News-Letter, American Assn. of Psychiatric Social Workers, 41 East 47th St., New York. Now a printed bulletin. $1.00 a year.

New in its smaller page, and in being printed in large type on dull-finish paper, is *Birmingham's Health,* Jefferson County Board of Health, Birmingham, Ala.

MAGAZINE ARTICLES

"Hay Fever and Sensitivity," by Morris Fishbein, M.D. *Saturday Evening Post.* May 21, 1932. Includes heredity's effect, hay fever calendar, effect of humidity.

"Keep a Health Diary," by C. Ward Crampton, M.D.; "Dry Skin and Oily," by H. R. Cades. *American Girl,* 670 Lexington Ave., New York. May, 1932. *15 cents.*

"The Risks of Childbirth," by Louis I. Dublin. *Forum.* May, 1932. Reprint from Metropolitan Life Insurance Co., New York. *Free.*

"Take Your Medicine," by R. F. Wadsworth, M.D. *Collier's.* May 28, 1932. "There's a lot in a point of view," "symptoms are catching."

ON THE JOB

A. W. Jones of the St. Louis Tuberculosis Society is now also secretary of the Missouri Society for Mental Hygiene.

Claude E. Towner, of Monongahela, Pa., formerly editor of the *Monongahela Daily Republican,* and a former member of the legislature, was recently appointed news director of the Pennsylvania State Dept. of Health. Mr. Towner will write for the newspapers about department activities. The weekly syndicated health and dental talks will continue to be prepared by the Bureau of Public Health Education.

MOTION PICTURES

The Red Cross picture, "The Symbol of Mercy," has been reproduced in 16mm film for use on portable sound projectors.

An enthusiastic review of "Arrowsmith" as a movie appeared in *Everybody's Health,* St. Paul, March, 1932. "Arrowsmith Shows Thrilling Adventures of Medical Heroes." We have heard that the motion picture version of the novel is free of some elements objectionable to the medical profession.

"Why Willie Was Willing to Wash." National Motion Pictures Co., Indianapolis. "The story of a very dirty little boy who becomes willing to get familiar with soap and water only after he has been vividly shown the extreme importance of cleanliness to himself." 1,000 feet. 15 minutes. Also in 16mm at less than half the cost of 35mm.

HOW IT IS DONE

"Mark Time" and "Ben Hustler" give some good advice to inspectors of roadside eating places. *Public Health News,* New Jersey Dept. of Health. April, 1932.

"Investment," a "weekly health message" of the Iowa State Dept. of Health, is a half-dozen paragraphs urging the worthwhileness of health activities.

Several appreciative letters from former patients are published in the 1931 report of the Saturday Hospital Society, Leicester, England.

"Child Health Teaching" was presented in a round table conference of State Tuberculosis and Public Health Committee, S.C.A.A., New York. The participants included 11 speakers, a chairman, a secretary, a staff assistant and two consultants.

Something of the variety and extent of "education and publicity" possible in a specialized field is revealed in the annual report of the Chicago Heart Assn., as noted in its *Bulletin,* 203 N. Wabash Ave., Jan.–June, 1932.

"Health Education" heads 10 references in "Bibliography on Education of the Negro," by Office of Education, Washington, covering Jan., 1928, to Dec., 1930. If ordered from Supt. of Documents send 10 cents.

"Carrying Forward a Nation-Wide Service," a booklet of National Organization for Public Health Nursing (450 7th Ave., New York) is an effective, straightforward statement of the field and the activities of the association. *Free.*

New posters are announced and local campaigns of education reported in *Occasional Bulletin,* Health and Cleanliness Council, 5 Tavistock Sq., London, W.C.1, England.

A large circle, "Analysis of Each Dollar Spent by Imperial County" makes very striking the excessive modesty of the county's health budget. In *Imperial County's Health,* mimeographed bulletin of County Health Dept., El Centro, Calif.

For the best editorials on the Christmas seal cash prizes amounting to $125.00 were awarded by the Ohio Public Health Assn., Columbus. For best editorial in a daily: to G. J. Kochenderfer, Mansfield *Journal.* For best editorial in a weekly: to W. O. Markham, Mineral City *Promoter;* for second best: to G. A. Kikendall, Cuyahoga Falls *Reporter.*

"Dental Hygiene" is the central theme for the Jan.-Feb., 1932, issue of *Commonhealth,* Massachusetts Dept. of Public Health. On 41 pages appear 23 short articles—problems, projects, experiences. Information as to addresses and prices for securing educational materials and professional reading is lacking in some cases. Likewise in the general "Book Notes" no price is given for the title likely to interest more readers than the two books which are priced. Two letters are necessary to order that book.

USING THE MIMEOGRAPH

A printed heading for top of first page is used for the mimeographed *Bulletin,* Bexar County Public Health Assn., San Antonio, Tex.

A mimeographed front page on heavy tinted paper gives distinction to the monthly *News Letter,* Michigan Public Health Assn., Lansing. The other pages are on ordinary mimeograph paper.

Orange bond paper, with printed heading and tail-piece, makes it easy to recognize the monthly issues of *News Letter* of Dutchess County Health Assn., Poughkeepsie, N. Y.

A letter-size, mimeographed sheet invited the "neighbors" of Maternity Center Assn. of Brooklyn to a baby "fashion show," plus an exhibit, a playlet and a cup of tea. Paper cost $.59; 500 envelopes, $2.00; postage, $10.00; mimeographing done in the office; illustrations "sketched by young art student"; envelopes addressed by volunteers; total cost, $12.59. A few copies *free.* Address: 42 Livingston St.

BOOKS AND REPORTS

Human Physiology—*By Percy Goldthwait Stiles. Philadelphia: Saunders,* 1932. 448 pp. Price, $2.25.

The sixth edition of Dr. Stiles' book meets the need of the high school and college student admirably. In the lower grades the student learns health precepts and rules. With adolescence comes an inquiring skepticism and a challenge of accepted beliefs. He begins to think thoughts of his own and needs the raw materials out of which pragmatic knowledge is made. Dr. Stiles's presentation not only arouses his interest in physiology *per se* but also leads the student to draw logical conclusions that have a bearing on his conduct and help him to form sound opinions about public health.

Physiology is based on physics and chemistry. Anatomical shapes, appearances and arrangements present no great difficulties to the student (nor do they interest him profoundly), but it is not easy for him to visualize molecules and forces and to grasp the transformation of energy by living tissue. The author is a master in explaining such intangibles relating to structure and function. He has an ingenious way of picturing concepts by the use of apt analogies. For example, why does the victim of an amputation describe minutely, pains and other feelings, which seem to come from the lost limb? The brain receiving afferent nerve impulses associated with sensory endings is like "The engineer of a steamboat (who) cannot tell whether his gong has been rung from the pilot house or some other station." Is alcohol a depressant or a stimulant? There are two ways of accounting for the increase of the speed of a train descending a grade; more power may have been applied or the brakes may have been taken off. Alcohol takes off the cerebral brakes.

Throughout the book the author adheres closely to what is actually known. In discussing disputed subjects or unproved theories, he avoids making unequivocal statements. Excellent judgment is used in emphasizing the important and excluding the extraneous, although the appetite for more detail of certain subjects must surely be whetted.

The practical suggestions as to how the student may use his knowledge are to the point and convincing. An example is the short but excellent section on the fundamentals of sex hygiene. The style is direct, the sentences are short, the illustrations are well drawn and free from confusing detail.

H. E. KLEINSCHMIDT

Health Horizons—*Compiled by Jean Broadhurst, Ph.D., and Marion Olive Lerrigo, Ph.D., under the direction of the Emma Dolfinger Memorial Committee. New York: Silver Burdett,* 1931. 516 pp. Price, $3.00.

Health Horizons is a generous grist for the mills of health education. It is a prolific source of information on an extensive variety of subjects, intimately and remotely related to the content of health education for all levels of school and university work. It is a beautiful memorial to Emma Dolfinger.

In format, type and texture this volume has an uncommon appeal. It is legible, readable and full of one-thousand-and-one things that teachers, health educators and physicians will find useful, instructive and interesting. It brings together within the covers of a single volume a vast number of essential

facts gathered from the history of science, the laboratory, the clinic and the public health field. Each paragraph is succinct, terse, and to each are attached the essential reference facts, so that where there is need, one may go back to the original contribution for a more detailed statement.

The chapter heads are appealing and provocative. There are such interesting titles as "The Use of Milk Through Sixty Centuries," "Milk and Long Life," "The Useful Soy Bean," "Plant Malnutrition," "Pulling Teeth With Ashes of Ants," "Experiments With A Willow Tree," "George Washington's Dentist," "Commerce and Epidemics."

The material is divided into 23 sections in which are included all phases of individual and community health. There is a most laudable absence of anything suggesting self diagnosis and self treatment. The book contains an intelligently selected bibliography and a detailed index.

Health Horizons merits unconditional endorsement. It should be in the personal library of every health counsellor and health instructor, and in every hygiene class room. IAGO GALDSTON

Influence of Social and Economic Factors on the Health of the School Child—*By Raymond Franzen. Monograph IV of the School Health Research Series of the American Child Health Association. New York.* 1932. 160 pp. Price, paper $1.00, cloth $1.25.

Are we spreading our school health program too thin? Should we try to reach all economic levels or should we give more attention to the less privileged in the endeavor to wipe out some of the discrepancy in health opportunity existing between the extremes of economic levels? If so, what activities are appropriate for the different groups? These are questions that run through one's mind on perusing this book.

At a time when economic conditions are subnormal, a work of this kind is particularly appropriate. Municipal economics are threatening a reduced expenditure for health activities. Where shall the paring be done? What activities shall be curtailed? Although this book does not answer these specific problems, some of its findings should be helpful in the making of administrative adjustments. It shows what is not so surprising, and yet what we are so apt to forget, namely, that as compared with the school influence, social and economic forces have a preponderant influence in determining the state of health in school children. There are measurable evidences of the beneficial effects of our school health program efforts, to be sure, but relatively they are small.

The process of untangling the social and economic influences on health in order to identify the specific end result of a specific educational or corrective program, is a very difficult and complex affair. The analytical steps portrayed in this book take account of the intricacies involved and, though unfamiliar to most of us, yet we can appreciate the reasons for this care.

Have we not been undertaking social and health studies in the past in entirely too casual a manner? In this book we begin to see a new and distinct field developing—the field of biometrics, or the application of precise quantitative measurement to human affairs. We suspect that if it is given sympathetic and kindly consideration during its early developmental stage, a powerful ally to public health effort is in the making.

A few illustrations of the detailed findings reported follow. Health knowledge of 5th and 6th grade pupils is very largely determined by intelligence. The brighter children stand higher regardless of school health training. Scores on health education tests do not reveal success in health teaching until allowance has been made for the intelligence of

the child. The children of the better-to-do families have their hearing difficulties more adequately taken care of. Visual acuity, on the other hand, is no respecter of pocketbooks. Apparently there are no economic distinctions between schools either in the occurrence of vision defects or in their correction. Teeth are better cared for in families that can afford to pay for this service. But even a stronger influence is the type of home care as represented by what may be called cultural status. In children where families show a very small degree of absorption into American life—a very small frequency of intermarriages with American born mates—there are 3 times as many first molars missing as in children where parents are of those nativity stocks which most readily intermarry with the American born.

Group differences in children in the matter of nutritional status are almost entirely accounted for by social and economic influences. School health programs show no measurable influence on nutritional status over and above these socio-economic influences.

These are some of the points brought out in this fourth Monograph. A fifth volume promised later in the year, is to be devoted to an evaluation of school health practices. HENRY F. VAUGHAN

Man and Medicine. An Introduction to Medical Knowledge—*By Dr. Henry E. Sigerist. New York: W. W. Norton & Co., Inc.*, 1932. 340 pp. Price, $4.00.

Evidently the itch for informing the public concerning medical matters, which has been so apparent in America for several years, has passed on to Europe—but what a difference there is between this book and the usual grind which is turned out by American authors! Dr. Sigerist has succeeded to the chair held for so many years by Sudhoff, the acknowledged world-dean of professors of History of Medicine.

His approach to the subject is entirely different from that of any other book with which we are acquainted, and so is his treatment: In his preface, he says, "This book is intended primarily to acquaint young people who have chosen to enter medicine with the nature of their studies and their future profession, to guide and help them through the intricacies of the material which lies before them." He is a believer in the historical method of teaching, and has selected his basic facts from history. Running through the book, there are both philosophical and religious strains, ending with a quotation from Nietzsche which might well, with the Hippocratic Oath, be required of all students for graduation.

The book begins with a foreword by Dr. William H. Welch, and we agree fully with his statement: "I know of no other work covering the same broad field . . . So simple, straightforward, and devoid of unnecessary technicalities in the manner of exposition that the interest of the general reader cannot fail to be aroused." In fact, it has not been our good fortune to meet with any other book which is so interestingly written and contains so much material of value to students of medicine, or those who are considering the study. Indeed, it would be well if the public could be induced to read this book so that the attitude and ideals of the profession of medicine might be better understood.

MAZŸCK P. RAVENEL

League of Nations Health Organization Report of the Laboratory Conference on the Serodiagnosis of Syphilis Convened at Montevideo by the Institute for the Prevention of Syphilis of Uruguay *September 15–26, 1930*). *Boston: World Peace Foundation*, 1931. 131 pp. $.80.

The organization of the conference corresponded in principle to those pre-

viously held in Copenhagen. Specimens collected from patients who had been carefully studied were designated by serial numbers only and given to the serologists who participated. The results obtained with eight methods which employed complement fixation and four flocculation tests were compared. The findings corresponded to those secured at the Conference held in Copenhagen in 1928. The best flocculation tests proved more satisfactory than any of the complement-fixation tests with which they were compared.

The majority of serologists taking part in the Montevideo Conference agreed that, in the hands of Kahn himself, the Kahn "standard" test, which (as was the case also at the Copenhagen Conference) proved to be absolutely specific and extremely sensitive, was the best of those demonstrated at the Conference. Müller's clotting test (modification II) and Kahn's "presumptive" test (this latter test being specially designed for the control of syphilis in course of treatment) both gave a greater number of positive reactions with syphilitic material than did the Kahn "standard" test, but also two and three nonspecific reactions respectively.

Three out of the seven modifications of the B.-W method which were compared (Sordelli, Wyler, Scaltritti-Cassiniga) gave absolutely specific results, but a smaller number of positive results with syphilitic material than did the precipitation methods mentioned above. Other modifications of the B.-W method, without giving particularly sensitive results with syphilitic material, gave from 6 to 13.9 per cent nonspecific reactions.

In view of these findings, the employment of two different diagnostic methods simultaneously was recommended.

The sensitive methods for complement-fixation used in North America were not employed at the conference. Certain of these complement-fixation tests have been shown by the coöperative studies made from 1925 to 1930 for the Committee on Standard Methods of the Laboratory Section of the American Public Health Association (*Am. J. Syph.*, 1927, 1929, and 1930) to be slightly more sensitive and no less specific in their action than the flocculation tests, including those of Kahn, Müller, and Meinicke, with which they were compared. RUTH GILBERT

Noise and Vibration Engineering—*By Stephen E. Slocum, Ph.D. New York: Van Nostrand,* 1931. 171 pp. Price, $2.75.

This book presents valuable quantitative data upon the sources of noise and vibration and should be of distinct value to engineers and architects confronted with problems of vibration and noise prevention.

Vibrations with frequencies less than 15 per second are felt as tremors, whereas, vibrations with frequencies between 15 and 30 per second are heard as low rumbling noises. Musical notes and ordinary noise have frequencies between 30 and 15,000 to 30,000 per second.

The prevention of vibration is a problem of structural dynamics, wherein critical speeds of structures likely to be the source of vibration are avoided, or where vibration dampers or insulators are provided to change the continuity of vibrating structures. Thus the use of sheets of cork, lead, and asbestos pads at the foot of building columns results in damping of the vibrations of foundations before they are transmitted to the main structure, or similar insulators may be placed between separate units of structures.

The book deals first with transmission of elastic ground waves, and briefly reviews geophysical investigation of underground conditions by the use of seismographs. The properties of vibration dampers and insulators are then considered. Corkboard, hair felt, rubber, asphalt, lead, asbestos, sand and gravel are considered as vibration dampers or insulators. The results of a quantitative study of these materials are presented, and the actual practice in the insulation of tall buildings against transmission vibration is reviewed, with

special reference to the Grand Central Terminal in New York and the new Pennsylvania Railroad Station in Philadelphia, Pa.

The problem of preventing vibration and noise due to street traffic is considered in a separate chapter. The importance of smooth pavement and the possibility of insulating monolithic pavement structures from buildings are emphasized. Note is also made of the very material reduction in street noise resulting from improvement in the design of vehicles, track structures, etc.

Noises and vibrations are greatly intensified in enclosed subways. Experience with this subject in New York, Boston, Philadelphia, and London is reviewed, and the conclusion is drawn that the prevention of undue noise in subways requires careful consideration of practically all details involved in construction and operation of such structures. It is possible to line subways with sound absorbing material and thereby greatly reduce noise by damping reverberations. Improvements in track structures and rolling stock also are fruitful fields of development.

The economic aspect of noise abatement is considered. Although no precise information is presented relative to damages to structures due to vibration, or relative to the economic loss resulting from the nervous strain of those exposed to noise, nevertheless, the data presented indicate the seriousness of noise in urban communities and the necessity of active steps being taken to minimize vibration and noise. In general, the varied and complex subject of the control of noise in communities is shown to justify the creation of noise abatement commissions acting under local ordinances. The book concludes with a chapter on the mathematics of vibrating structures. A 9-page bibliography is appended.

This timely book is of chief interest to architects, and mechanical and civil engineers. The sanitary engineer and other public health worker interested in the control of the environment, however, will find much of interest in the book. The author does not attempt to give data relative to the public health importance of community noise, although the nervous strain resulting from exposure to noise is indicated by quotation from literature. One gathers the impression, however, that the problem of eliminating unnecessary noise and vibration is of vast magnitude, requiring the coöperation of everyone acting under the guidance of noise abatement commissions, rather than municipal health departments. CHARLES R. COX

Social Problems and Social Planning —*By Cecil Clare North, Ph.D. New York: McGraw-Hill,* 1932. 409 pp. Price, $3.50.

This book presents a connected sociological approach to social problems. It shows the relation of essential sociological theory to the situations out of which social problems arise and to the procedure that is involved in dealing with such problems.

Following a somewhat philosophical discussion of human needs, attitudes, values, and culture, a chapter is devoted to the question of "Making up the Social Deficit." Activities concerned with the relief of suffering are classified under 4 divisions: the care of the economically dependent; the care of the handicapped and those unable to secure medical attention for themselves; the treatment of the delinquent; the amelioration of the living and working conditions of those who are lacking in adequate social protection or social opportunities. Social case work is defined as the study of the causes for the social difficulties that a person or a family may have, and the provision of a treatment designed to remove those causes and restore the person to normal social relations.

Various references are made to the relation of public health and social work and considerable space is given to the care of the sick poor. It is stated that the healing of the bodies of the poor has been done in a much more scientific manner than has the cure of their social difficulties. On the whole, the discussion of the medical care of indigent cases is presented in fully as favorable a light as the situation throughout the country warrants. In considering the subject of population and the shaping of population policies, the discussion of arguments against birth control concludes as follows:

> The most that such efforts can accomplish is to retard the dissemination of information, and prevent the practice of contraception from securing the benefits of competent medical supervision which could be more easily accomplished if legal barriers did not exist.

Chapters on Fitting Government to Changing Needs, and Goals of Social Reconstruction are among the stimulating contributions. In view of the close relationship of constructive social service and public health work, and in view of the rapidly accumulating knowledge regarding fruitful lines of endeavor in both of these fields, this volume should prove interesting and helpful to many health workers as well as to the social work group for whom it was primarily designed. IRA V. HISCOCK

Methoden der individuellen Auslese für gewerbliche Berufe—*By Theobald Fürst—in* **Abderhalden Handbuch der biologischen Arbeitsmethoden**—*Berlin: Urban & Schwarzenberg*, 1931. *Abt. IV, Teil 16, Heft 1, Lieferung 371.* 288 pp. Price, 15.50 marks.

This treatise on the methods of individual selection for industrial vocations falls into the field of industrial medicine as outlined at the International Conference at Lyons, France, in 1929. As defined by the author, this medical discipline is concerned with the medical selection of the individual worker and the estimation of his performance, capacity, and competitive limitations in the labor market; with the determination and estimation of industrial hazards; the medical consideration and supervision of these hazards; the hygienic supervision and sanitation of factories and industrial processes; the statistical analysis of the biological effects of industrial life upon the workers; and the experimentation necessary for the medical understanding of the materials of industry and the mechanism of industrial hazards. This section is concerned primarily only with the methods of selecting laborers, in the light of these other aspects of industrial medicine.

Of special value are the detailed blanks used in the study of the young worker. These make use not only of formal school records, but require quite a detailed analysis of personal qualities and behavior during the years of school life. Stress is laid on the physical, physiological, mental, and emotional traits which are indicative of departures from the norm, especially at adolescence. The constitution or hereditary complex is studied with reference to the detection of diathesis or of tendencies to particular types of disease, not only in the individual, but also in his parents.

The procedures in physical measurement, in examination of glandular development, posture, muscular development, respiratory function, heart and circulation, blood, nervous system, skin, and sense organs are given in detail and the significance of the divergences are noted. The work is well illustrated and the procedures are described with full detail. They are indicative of the great advance which industrial medicine has made in Germany in recent years. The work here outlined is basic in all preventive measures for the reduction of industrial hazards, in the proper placement of the individual worker, in his

later medical care, and in the reduction of and prevention of disease among workers in industry.

CHARLES A. KOFOID

Man and **Microbes**—*By Stanhope Bayne-Jones, M.D. Baltimore: Williams & Wilkins,* 1932. 128 pp. Price, $1.00.

This volume is one of the Century Progress Series. The name of the author assures us that it is authoritative. It is well and interestingly written, and will serve a useful purpose for the class of people for whom it is intended. With these limitations in mind, it can be thoroughly recommended from every standpoint. MAZŸCK P. RAVENEL

The Social and Ethical Significance of Nursing—*By Annie W. Goodrich. New York: Macmillan,* 1932. 401 pp. Price, $3.00.

Nurses everywhere will hasten to read this book which is a compilation of a series of addresses made by the author, who is one of the most brilliant nurses in America, over a period of more than a decade. These addresses deal with the nurse in her relation to ethics, education, the hospital, the community, the university, and the world.

Nurses will travel long distances to hear Miss Goodrich talk, and all their powers of concentration are called into play in listening, because her language is not that of the ordinary expository writer but that of the most finished literary scholar who draws from a wide range of literature for quotations to prove her points. She leaves her listeners and her readers with minds in the clouds and seeing some of the visions she sees of what the social and ethical significance of nursing has been, is now, and can be in the future. She is a highly inspirational speaker and writer, and might be called the nursing world's "least mortal mind."

This fine book which portrays the struggles, beliefs and aspirations of the nursing profession in its search for the science of human betterment will be a classic in every nursing library. And it is to be hoped that great numbers of the laity will read it and absorb mentally and emotionally the sound philosophy and ideals of nursing which are so beautifully depicted. EVA F. MACDOUGALL

Proceedings of the National Conference of Social Work—*Chicago: University of Chicago Press,* 1931. 702 pp. Price, $3.00.

In this volume are included the papers of 63 men and women widely known in social work who discuss the problems of social workers and their associates. Personality and health problems, the economic situation, the clinic and dispensary movement, costs of medical care, law enforcement, international aspects of immigration, and educational work with the Indians are among the subjects. In his presidential address, Dr. Richard Cabot particularly emphasizes the need of criterions and of tests of the success or failure of treatment in social case work.

IRA V. HISCOCK

Child Health and the Community—*By Courtenay Dinwiddie. New York: Commonwealth Fund,* 1931. 80 pp. Price, $1.00.

Everyone who is concerned with child health is more or less familiar with the child health demonstrations conducted by the Commonwealth Fund. Many have read with the greatest interest the publications of the Fund which give in detail the story of the various demonstrations. Now we have a small volume from the pen of Mr. Dinwiddie which interprets the meaning and results of the four demonstrations—a thoughtful and readable exposition of theory and practice, so to speak. The volume is small but contains valuable material. We have first the background of the demon-

stration; then a chapter devoted to contrasting and evaluating the four demonstrations; then a chapter each on "Physicians and the Demonstrations" and "The Demonstrations and Public Opinion"; ending up with an appendix outlining the program followed and a complete bibliography dealing with them. An interesting part of the book is a foreword by Barry C. Smith, General Director of the Commonwealth Fund.

At the very beginning of his discussion, the author has started off on the right foot in his statement concerning: "The modern child health program which has *contributed* to the phenomenal reductions in infant and child mortality of the last twenty-five years" (italics are mine). This moderation of statement is as unusual as it is refreshing in public health literature. Even the confirmed skeptic—of whom there are too few, in public health—would not take exception to such restrained language as this: "there is evidence, then, that measurable advantage to individual mothers and children followed health department service; and that the general effect of the demonstrations was to reduce infant and child mortality in the community as a whole." Mr. Dinwiddie has wisely avoided the meticulous inaccuracy of interpreting the drop in death rate in terms of dollars and cents.

The chapter entitled "Physicians" is especially to be commended to both practising physician and public health worker. The ten statements on pages 43 and 44 offered as "reasonably fixed premises for any permanently successful community program of preventive medicine and public health" are worthy of more than casual reading. Some exception might properly be taken to certain aspects of number 9. On the other hand, items 5 and 6 set forth the plain facts when they state that practising physicians are largely unprepared to guide the public in the field of preventive medicine, and the public is largely unready to demand or pay for such guidance. It is the fashion in some quarters just now to emphasize the physician's unreadiness in contrast to the supposed eagerness of the public to receive instruction in hygiene. Experienced sanitarians know that it is a case of six of one and half a dozen of the other. Very few people are as yet willing to pay for hygienic advice; they often will not bother to avail themselves of it even if offered without charge.

No one interested in child health should fail to sample this meaty little book. MERRILL E. CHAMPION

Methoden der Arbeitsmedizin. Klinische Untersuchungen — *By Franz Koelsch — in* **Abderhalden Handbuch der biologischen Arbeitsmethoden,** Abt. IV, **Angewandte chemische und physikalische Methoden,** *Teil 16, Heft 2,* pp. 289–496. **Berufliche Krankheits- und Sterblichkeitsstatistik.** *Ibid.,* pp. 497–518. *The two in Lieferung 376. Berlin: Urban & Schwarzenberg,* 1932. Price, 12.50 marks.

This part of Professor Abderhalden's great handbook of biological methods is a part of the section devoted to industrial medicine, and Lieferung 376 contains Dr. Koelsch's papers on clinical methods and morbidity and mortality statistics. The first of these contributions deals with the instrumental equipment for investigations in occupational selection, physiological and psychological, and for the study of fatigue. This is followed by a long account of investigations on the causes of industrial diseases such as aëraemia of compressed air workers, joint necrosis of phosphorus workers, silicosis of stone workers, etc., and an interesting list of investigations in progress arising from legislation dealing with hazards in new fields in the chemical industries, and periodic exam-

inations in older and better known hazards.

The second section treats of the pathology of the organ systems, especially of the skin and nails, as affected by industrial materials, manipulative processes, temperatures, electric current, X-ray, chronic eczemas due to galvanizing, exotic woods, chemicals which may incite cancer, etc. Discussion follows of the effects of pneumatic tools on the muscular and skeletal systems; of abnormal temperatures, gases, and dusts on the lungs; of certain chemicals on the digestive and urinary systems; of organic and inorganic poisons on the central and peripheral nervous systems; and of certain employments on the sense organs. Nearly a hundred pages are devoted to industrial poisons, and their effects on the body, especially the new hazards arising from new products of the chemical industries. A fourth section deals with communicable disease fostered by industry, such as anthrax, foot and mouth disease, and hookworm. A brief account, with illustrative tables, is given to aims, methods, and fallacies of morbidity and mortality statistics as related to industrial medicine and to occupational diseases.

CHARLES A. KOFOID

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Diphtheria Death Rates—This annual tabulation of diphtheria mortality in our great cities reveals a continuation of the marked decline. Deaths in 1931 were only half the number reported in 1929.

ANON. Diphtheria Mortality in Large Cities of the United States in 1931. J. A. M. A. 98, 19:1644 (May 7), 1932.

When to Immunize—In children under 3 months, about one-third of all diphtheria immunizations are failures; under 9 months one-fourth failed to respond. Between 2 years and 4, 5 per cent were failures. Under 9 months of age a preliminary Schick test should be given. These conclusions are numbered among many interesting observations.

BLUM, J. Age Factor in Active Immunization of Infants Against Diphtheria. J. A. M. A. 98, 19:1627 (May 7), 1932.

Prohibition and Alcoholism—"Prohibition" has not prohibited a notable increase, since 1920, in the number of persons who misuse alcohol to such an extent that they become mentally diseased: 1920 being the dividing line in "before and after" drinking data.

BROWN, F. W. Alcoholic Mental Disease Before and After Prohibition. J. Am. Stat. Assn. 27, 177A:175 (Mar.), 1932.

The Truth About Bran—So prolific has been the pseudoscientific propaganda about bran, and so sour the counter blasts that this effort to get down to a dispassionate study is refreshing. It seems that bran's value lies only in its fiber content, but as healthy persons need 100 mg. or more of fiber per kg. of body weight each day, bran has its place as a source of supply.

COWGILL, G. R. and ANDERSON, W. E. Laxative Effects of Wheat Bran and "Washed Bran" in Healthy Men. J. A. M. A. 98, 22:1867 (May 28), 1932.

Health Administration and the Care of the Sick—After commenting on local health services in Boston, the author raises the issue of the medical care of the sick as a function of public health administration. Some practical details involved in the problem are suggested, and though no definite solu-

tion is proposed, the picture that is raised should prove potent to provoke discussion.

DUBLIN, L. I. The Coördination of a Community's Health Services. New Eng. J. Med. 206, 18:938 (May 5), 1932.

Vitamin D Values in Irradiated Foods—Of the common foods comprising the child's dietary, concludes the author of this excellent summary, milk, both liquid and dry, has thus far proved the most successful medium for irradiation: cereals and vegetables are unimportant sources of vitamin D. This will grieve the advertisers.

KOCH, E. M. Irradiated Foods. Pub. Health Nurs. 24, 5:263 (May), 1932.

Cancer Prevention Propaganda—"The giraffe has a long oesophagus, but does not have cancer there because he uses simple food and swallows slowly. . . . The domestic cow is milked and 'stripped' every morning and evening and no one ever hears of cancer of the udder of a cow. . . ." You may write your own annotation to this.

MCCULLOUGH, J. W. S. Cancer at Home and Abroad. Canad. Pub. Health J. 23, 5:203 (May), 1932.

Maternal Death Statistics—"Vital statistics as compiled by the public health authorities cannot be used as a measure of the quality of maternity care." That this conclusion is correct those who read this excellent discussion will agree and perhaps thereafter some will hesitate to rush in where statistician-angels fear to tread.

MILLER, J. R. Can Vital Statistics Be Used to Measure Quality of Maternity Care? New Eng. J. Med. 206, 19:999 (May 12), 1932.

Private Practice and Preventive Medicine—The neglect of the sick cannot continue, for opinion demands adequate care for all. For most sick persons care must be provided by society. On these postulates is based the author's discussion of the relationship of general practice to the preventive medical program here and abroad.

NEWSHOLME, A. The Relationship of the Private Medical Practitioner to Preventive Medicine. J. A. M. A. 98, 20:1739 (May 14), 1932.

Streptococcal Disease Effects and Causes—Three characteristics of the pathogenicity of hemolytic streptococci (rash producing, pyogenic, and invasive) vary from case to case. Host defence and cite of conflict also vary. These differences account for the variety of pathological patterns of human streptococcal disease, concludes the author. That seems reasonable.

OKELL, C. C. Haemolytic Streptococci in Infective Disease. Lancet 222, 5667-69:762 (Apr. 9-23), 1932.

Preschool Child Posture—In this excellent discussion of the posture of the toddler, the futility of attempting to apply grown-up standards to this age group is wisely emphasized.

PHELPS, W. M. The Posture of the Preschool Child. Pub. Health Nurs. 24, 5:236 (May), 1932.

Standardizing Streptococcus Antitoxins—A practical laboratory animal method of measuring the potency of scarlet fever streptococcus toxins and antitoxins is described. The end results are superior to similar tests on human subjects. Incidentally, the differences in neutralizing value of the different products is discussed.

VELDEE, M. V. The Standardization of Scarlet Fever Streptococcus Antitoxins. Pub. Health Rep. 47, 19:1043 (May 6), 1932.

Some Social Philosophy—Food for thought for the socially minded health worker, and for those too who like this annotator would have to answer in the negative such questions as these propounded by the author: "Or did it ever occur to you to consider why there

should be even one child guidance clinic in New York City? Why one anywhere? Does it seem strange that there should be so many troubled and troublesome children?"

WILLIAMS, F. E. Out from Confusion. Survey Graphic 68, 5:225 (June 1), 1932.

Milk-borne Poliomyelitis—An unusual opportunity to study an outbreak of poliomyelitis occurred in an institution using raw milk. The author of the paper reports finding his pleomorphic streptococcus in the throats and spinal fluids of cases, in well students and in the particular milk at fault. The paper will no doubt cause acute pain in those research workers who have been unable thus far to agree with Rosenow and his findings. However health officials will find in it another reason for pasteurization.

ROSENOW, E. C. An Institutional Outbreak of Poliomyelitis Apparently Due to a Streptococcus in Milk. J. Infect. Dis. 50, 5–6:377 (May–June), 1932.

BOOKS RECEIVED

A CHILD'S BOOK OF THE TEETH. Revised and enlarged. By Harrison Wader Ferguson. Yonkers: World Book Co., 1932. 106 pp. Price, $.68.

SOCIAL HYGIENE IN SCHOOLS. Report of the Subcommittee on Social Hygiene in Schools, William F. Snow, M.D., Chairman. White-house Conference on Child Health and Protection. New York: Century, 1932. 59 pp. Price, $.50.

DISEASES OF THE CORONARY ARTERIES (Myocarditis). By Don C. Sutton and Harold Lueth. St. Louis: Mosby, 1932. 164 pp. Price, $5.00.

SLUMS, LARGE-SCALE HOUSING AND DECENTRALIZATION. Edited by John M. Gries and James Ford. The President's Conference on Home Building and Home Ownership. Washington, D. C., 1932. 245 pp. Price, $1.15.

CHILD LABOR. Publication of the White House Conference on Child Health and Protection. New York: Century, 1932. 592 pp. Price, $5.00.

PULMONARY TUBERCULOSIS. 4th ed. By Maurice Fishberg. Philadelphia: Lea & Febiger, 1932. 1191 pp. Vols. I and II, Price, $15.00.

HEALTH SECTION REPORT, World Federation of Education Associations, July 27th–August 1st, 1931, Denver, Colo. New York: American Child Health Association, 1932. 299 pp. Price, $1.00.

PSYCHOLOGICAL RACKETEERS. By Dorothy Hazeltine Yates. Boston: Badger, 1932. 232 pp. Price, $2.00.

THE EXPECTANT MOTHER'S HANDBOOK. By Frederick C. Irving. Boston: Houghton Mifflin, 1932. 203 pp. Price, $1.75.

ANAESTHESIA. By W. Stanley Sykes. New York: Norton, 1932. 128 pp. Price, $2.00.

MALE DISORDERS OF SEX. By K. M. Walker. New York: Norton, 1932. 191 pp. Price, $2.00.

THE MEASUREMENT OF ATHLETIC POWER. By C. H. McCloy. New York: Barnes, 1932. 180 pp. Price, $3.00.

PAIN IN THE PLEURA PERICARDIUM AND PERITONEUM. By Joseph A. Capps. New York: Macmillan, 1932. 99 pp. Price, $3.00.

QUANTITATIVE CLINICAL CHEMISTRY. Vol. II—Methods. By John P. Peters and Donald D. Van Slyke. Baltimore: Williams & Wilkins, 1932. 957 pp. Price, $10.00.

PROBLEMS OF CITY LIFE. A Study in Urban Sociology. By Maurice R. Davie. New York: Wiley, 1932. 730 pp. Price, $4.25.

THE SCHOOL HEALTH PROGRAM. A Publication of the White House Conference. New York: Century, 1932. 400 pp. Price, $2.75.

THE ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM. A Publication of the White House Conference on Child Health and Protection. New York: Century, 1932. 41 pp. Price, $.50.

A JOURNEY TO MANY LANDS. Health Readers: Book Four. By Williedell Schawe. Yonkers: World Book Co., 1932. 199 pp. Price, $.80.

PRINCIPLES OF HEALTH EDUCATION. By Clair Elsmere Turner. New York: Heath, 1932. 317 pp. Price, $2.00.

FOOD AND YOUR BODY. By Mary Pfaffmann and Frances Stern. Boston: Barrows, 1932. 170 pp. Price, $2.00.

THE ADMINISTRATION OF REGULATORY INSPECTIONAL SERVICES IN AMERICAN CITIES. By Edna Trull. New York: Municipal Administration Service, 1932. 184 pp.

TEMPERATURE CONTROLLED CENTRIFUGALIZATION. International Equipment Co., Boston, Mass., 1932. 8 pp. Free.

NEWS FROM THE FIELD

STATE CHARITIES AID SIXTY YEARS OLD

THE State Charities Aid Association of New York celebrated its 60th birthday on May 11, 1932. The original purposes for which the Association was founded in 1872 still hold: To promote an active interest in public charitable institutions in the State of New York, in order to improve the condition of their inmates, and to make more efficient the public relief system in the light of "the most enlightened views of Christianity, Science and Philanthropy."

LOS ANGELES PUBLIC HEALTH EXHIBIT

THE first display of equipment, materials, methods and services for the furtherance of public health ever to be held on the Pacific Coast has been announced. This will be the Los Angeles County Public Health Exposition, to be conducted under the sponsorship of the Los Angeles County Tuberculosis and Health Association, and will be held from August 12 to 18, in the permanent buildings of the International Industrial Expositions, Limited.

NEW YORK STATE SEWAGE WORKS MEETING

THE New York State Sewage Works Association held its Spring Meeting at Buffalo, N. Y., June 10 and 11. Important papers were presented by Clyde Potts, Harold J. Huber, Edmund B. Besselievre, A. F. Dappert, C. C. Agar, Earle B. Phelps, K. A. Keirn, and others.

GILMORE MEMORIAL FOUNDATION

TO perpetuate the memory of Eugene S. Gilmore, for 25 years Superintendent of the Wesley Memorial Hospital, Chicago, the Eugene S. Gilmore Memorial Foundation has been created by his friends and associates. The Foundation will create a Fund, the income of which will be used in establishing scholarships for the graduates of Wesley Memorial Hospital School of Nursing.

COURSES ON CHILD HYGIENE IN ITALY

THE National Children's Bureau of Italy has just issued a circular to its provincial branches ordering the establishment of popular courses on maternal and infant hygiene for girls between 16 and 18 years. The courses are to consist of practical and theoretical work and are to be given preferably in infant welfare institutions, for instance, day nurseries. The girls attending such courses will not be entitled to diplomas because these are issued only to graduates of special courses for the training of persons intending to take up maternal and infant welfare work as a profession.—*Maternità ed Infanzia*, Rome, Jan., 1932.

MEDICAL COLLEGE OF VIRGINIA

THE Carnegie Corporation of New York has made an appropriation of $10,000 toward the maintenance of the library of the Medical College of Virginia, which will be housed in a new building this summer. Adjoining the new library of the college, the Richmond Academy of Medicine has built its home and library, which will contain the famous Joseph L. Miller collection of rare first editions, engravings, silhouettes, medical curios, etc.

FLORIDA PUBLIC HEALTH ASSOCIATION

THE Florida Public Health Association has become a member of the American Public Health Association, and is therefore now included among the Affiliated Societies with a representative in the Governing Council of the Association—this representative to be announced later.

The present officers of the Florida Public Health Association are as follows: President, Horatio Newton Parker; First Vice-President, Inez M. Nelson, R.N.; Second Vice-President, Rothwell Lefholz, M.D.; Secretary, Stewart G. Thompson, D.P.H.; and Treasurer, Stewart G. Thompson, D.P.H.

GORGAS ESSAY CONTEST

HARRIET JONES, a high school junior in St. Agnes School, Albany, N. Y., was awarded the Henry L. Doherty Prize of $500 for the winning essay on mosquitoes in the Fourth Annual Gorgas Memorial Essay Contest.

President Hoover, as Honorary President of the Institute, presented the award at the White House on June 9.

The subject of this year's contest was "Mosquitoes, Their Danger as a Menace to Health, and the Importance of Their Control." High school juniors and seniors from every state and the District of Columbia participated, and 15,000 manuscripts were submitted.

MEDAL FOR DR. THEOBALD SMITH

THE Council of the Royal Society of Tropical Medicine and Hygiene of Great Britain, at its annual meeting, June 16, awarded the Manson Medal to Dr. Theobald Smith, of Princeton, N. J., director emeritus of the Department of Animal Pathology, Rockefeller Institute for Medical Research, New York, and formerly professor of comparative pathology, Harvard University.

MEMORIAL TO C. HAMPSON JONES

A COMMITTEE has been formed to arrange for a memorial to Dr. C. Hampson Jones, Charter Fellow of the A.P.H.A., who died April 11, for many years Health Commissioner of Baltimore, with Dr. Huntington Williams, Director of Health, as chairman. The memorial will take the form of an oil portrait of Dr. Jones, to be placed in the Health Department offices.

PERSONALS

SIR HENRY WELLCOME, LL.D., F.S.A., founder of The Wellcome Research Institution, has been elected Honorary Fellow of the Royal College of Surgeons of England. Sir Henry Wellcome is of American birth, and is well known for his world-wide scientific work and extensive pioneer researches in connection with tropical diseases, including the founding of The Wellcome Tropical Research Laboratories at Khartoun on the Upper Nile Regions of the Sudan, Africa. He is also a director of the Gorgas Memorial Institute, Washington, D. C., with its Tropical Research Laboratories at Panama.

DENNETT L. RICHARDSON, M.D., member A.P.H.A., formerly Superintendent and Resident Physician of the Providence City Hospital, now known as the Charles V. Chapin Hospital, was appointed Superintendent of Health of Providence, to fill Dr. Chapin's place.

MATHILDE S. KUHLMAN, R.N., Director of the Division of Public Health Nursing of the New York State Department of Health, died suddenly on May 30. Miss Kuhlman was a former president of the State Organization for Public Health Nursing, Fellow of the A.P.H.A., member of the American Nursing Association, National League of Nursing Education, and the Albany City Club.

CONFERENCES

July 21–29, 100th Anniversary Meeting, British Medical Association, London.

July 25–30, Regional Conference of the World Federation of Education Associations, Honolulu, Hawaii.

August 12–18. Los Angeles County Public Health Exposition, Los Angeles, Calif.

September 6–9, International Union Against Tuberculosis, The Hague.

September 12–19, American Hospital Association, Detroit, Mich.

October 3–7, Twenty-first Annual Safety Congress and Exposition, Washington, D. C.

October 24–27, 61st Annual Meeting, American Public Health Association, Washington, D. C.

November 14–18, Tenth Annual Short School, Texas Public Health Association, Dallas, Tex.

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Director, Bureau of Health & Public Instruction, American Medical Association

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PARLANE KINLOCH, M.D., D.P.H.
Chief Medical Officer, Department of Health, Scotland

A Study of the Convalescent Care of Cardiac Children
JANET P. JOHL, A.B.

Health and Sanitation in the County Jail
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